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Oil of Hops.

Dr. Wagner, of Germany, has been examining this oil, and has furnished some very interesting information respecting it. It does not contain any sulphur, and belongs to the group represented by the general formula, C10 (carbon) H8 (hydrogen). It is a mixture of camphene and a bihydrate of it, C20,H18,O2(oxygen). This oil is but slightly soluble in water. It has no narcotic action. When pure it is of a light brown color, has a powerful but not intoxicating odor, a warm and bitter taste resembling thyme. It scarcely reddens litmus paper. On testing it chemically to prove that there was no sulphur in it, an alcoholic solution was digested with fresh precipitated oxyde of lead, and no sulphuret was formed. An aqueous solution of the oil was digested with a bright silver coin, and no change was produced on the surface.

The oil C20 H18 O2 is isomeric with Borneo cajeput and bergamot oils, and the aldehyde of campholic acid, C20 H18 O4. By treating the oxygenated part of hop-oil with nitric acid, the author was unable to obtain anything more than a brittle yellow resin.

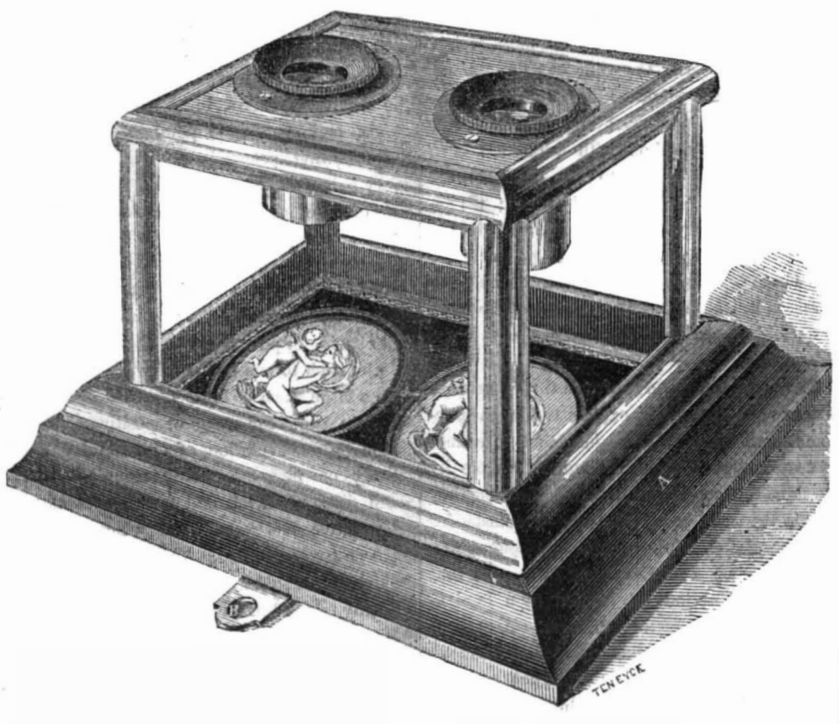
The author, has, together with V. Bibra, instituted a series of experiments on the physiological action of the oil; and they have ascertained that it has no narcotic effect, and corresponds with other volatile oils. A rabbit bore a dose of 20 drops without loss of appetite or any other sign of discomfort.

Rochleder's investigations have shown that the so-called active principles are common to all the members of a natural family. Both hops and hemp belong to the Urticaceæ; both plants have a great analogy in a physiological point of view. Now since the narcotic effect of beer results from a yet unknown constituent of the hop, probably an organic base, and as hemp, according to the above principle, would contain the same constituent, it would perhaps be theoretically correct to grow hemp instead of hops for the purpose of communicating to beer its bitter taste and narcotic properties. The bitter of hemp closely resembles that of the hop. In an agricultural point of view this would be very advantageous, for besides the fact that the growth of hemp is less dependent than the hop upon meteorological conditions, the former can, after the extraction of the soluble constituents, be employed in making yarn. The oriental nations have, since the most remote period, been acquainted with the narcotic properties of the 'Cannabis indica;" the famous napenthe of ancients is said to have been prepared by decocting the hemp leaves. At the present day the Arab employs his Haschish for the same purpose. In the Persian taverns in the country, an infusion of the larger leaves and capsules of hemp is used, under the name of "Subjee" or "Sidhee," to relieve the fatigue of travellers.—In Egypt, hemp extract is frequently taken with strong coffee after dinner.

Large Locomotive Shop.

By the "Philadelphia Ledger" we learn that two establishments for building locomotives in that city, Norris' and Baldwin's, turned out 134 last year. Norris' & Son's locomotive factory is the largest in this country.

MASCHER'S STEREOSCOPE.



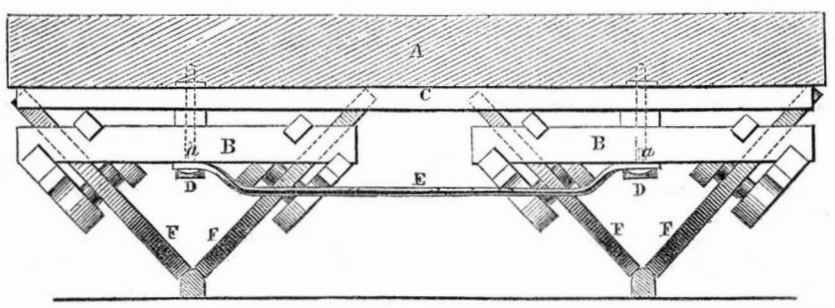
The accompanying engraving is a view of Mascher's new Stereoscope, designed for Daguerrean artists. It is constructed of plate glass mounted with German silver. Two tubes are seen, which contain the lenses, and may be screwed in or out to accommodate the vision of different persons.

A is a drawer containing the picture, which may be changed at pleasure. B B are plates by which the stereoscope is fastened in any desired position. This instrument completely protects the pictures, and saves the artist much time, which would otherwise be consumed in explaining to the uninitiated the mysteries of binocular vision. It is at the Crystal Palace.

This implement is intended to illustrate Mascher's Stereoscopic Daguerreotype Case, patented March 8th, 1853, and illustrated in No. 37 of our last Volume. These cases, we understand, are being rapidly introduced, and we certainly think that no one, having seen them, will have his picture set in any other. We spoke favorably of the invention in our former notice, and we again recommend it to the consideration of the public.

Circulars containing all necessary instructions for taking and putting up pictures, list of prices, &c., can be obtained by addressing the inventor, John F. Mascher, 408 North Second st., Philadelphia.

IMPROVEMENT IN CAR TRUCKS.



The annexed engraving represents a railway Truck, patented July 1st, 1851, by Daniel W. Eames, of West Turin, N. Y.

The claim is for the manner of arranging the wheels, F F F F, in pairs, with their axles at an inclination with each other and with the horizon: A represents the platform of the vehicle; B B are trucks secured to the cross-piece, C, by means of bolts, D D, on which they swivel, they are connected together by the tie rod, E. The wheels have their bearings in boxes secured to the truck, and, as will be perceived, converge toward each other in approaching the rails on the inclined sides of which they travel. *a a* are bolts confining to its place the cross-tie.

The sides of the wheels may be with or without the ordinary vertical flange—none is represented in the engraving. The upper surfaces of the rails may be bevelled, curved, or made in any other shape which shall be found best adapted to their successful working. The peripheries of the wheels must be adapted to the shape of the rail.

There is certainly some novelty about this invention, and the inventor claims for it several decided advantages. Among these he claims that it may safely be run at a much higher rate of speed than any other, not being so liable to run off the track; that it will turn short curves without straining the axles, or causing a slip of the wheels, and that consequently the running gear is subject to less wear, and is rendered more durable; that it prevents the swinging of the cars, so unpleasant when they are running at a great speed, and that the rail is rendered more durable, as the wear is distributed over a greater extent of surface.

Any further information which may be desired can be obtained by letter addressed to Daniel W. Eames, Constableville, Lewis Co., N. Y., the patentee and sole proprietor of the invention.

Tunneling the Falls of the Ohio.

The Falls of the Ohio are attracting much attention at present from various quarters, as to the best plan for making them passable for the immense trade and travel of the Great West.—The directors of various railroads, building and in contemplation, are making their calculations, estimates, and plans, for connecting their roads with Louisville and continuing them to both sides of the river. The idea of the "iron horse" and its train crossing the falls with the speed of light, and making the waters of the Ohio as easy of passage as the plains of Indiana, is a grand one, which could not be too quickly consummated.

A tunnel made of strong cast-iron cylinders, 15 feet in diameter, is proposed.—a good plan.

The Hot Air Engine in France.

"The hot air engine, one of Mr. Ericsson's has been sent over here to prevent the expiry of his French patent. It has been set to work at the establishment of Messrs. Mazeline, and a pamphlet on the subject has been issued by Mons. Emanuel Lissignol, the manager of the establishment. The cylinder is about 4 feet 6 inches diameter, and the feeding cylinder inverted over it, 4 feet diameter. Both cylinders are connected together and have the same stroke viz., 8 inches. At 36 revolutions per minute, the indicated power by the friction brake is only 3 horse, instead of 10 horse, its nominal power. This great loss of power Mr. Lissignol attributes to the numerous leakages and mal-arrangement generally of the machine. He proposes, as the first step towards improvement, to make the cylinder double-acting, and to avoid heating the bottom of the cylinder, by the use of a boiler or generator, based on the same principle as the regenerator, and composed of wire gauze."

[The above is from the correspondence of the "London Artisan." The hot air engine alluded to was the one which was constructed originally to drive the printing presses of the "New York Evening Post." It certainly was lucky for the "Post" that its engine was sent to France.—The hot air engine for the "Post," to replace it, was to be in by this time. We would respectfully ask the "Post" how it operates; does *it* give out more than *three* horse of its nominal *ten*? the thought of a hot air engine, with a cylinder, 4½ feet diameter, working at 3 horse power only, is something really laughable to a steam engineer. A steam engine with a cylinder only 6 inches in diameter, and 8 inches stroke could do as much work. We have to inform our readers, for a positive fact, that the Ericsson is getting in new cylinders, and her engines (still hot air) are to be operated on a totally different principle from the kind patented by Ericsson, as illustrated by us; they are to operate on the principle of Stirling's entirely.

Crossing the Atlantic in a Week.

Since we noticed the statement made by Mr. Norris, of the building of a steamship—himself the engineer, and J. W. Griffiths the nautical architect—which was to cross the Atlantic in six days, a number of inquiries have been made of us respecting it: answers to them cannot be given: it is best to wait the developement of events. From Major Norris and Mr. Griffiths we expect nothing ordinary, and if their vessel makes the voyage in eight and a half days, instead of six, they must get the *broom*. This would be most extraordinary sailing, as it would be an average of 360 miles every day. We shall be more than satisfied if the new steamship does this. Anything new that may come before us respecting it we shall report to our readers.

The Grand Trunk Railroad of the British North American Provinces was commenced last week at St. Johns, N. B. This railroad is intended to unite America with Europe at the nearest concecting points, to shorten ocean navigation.

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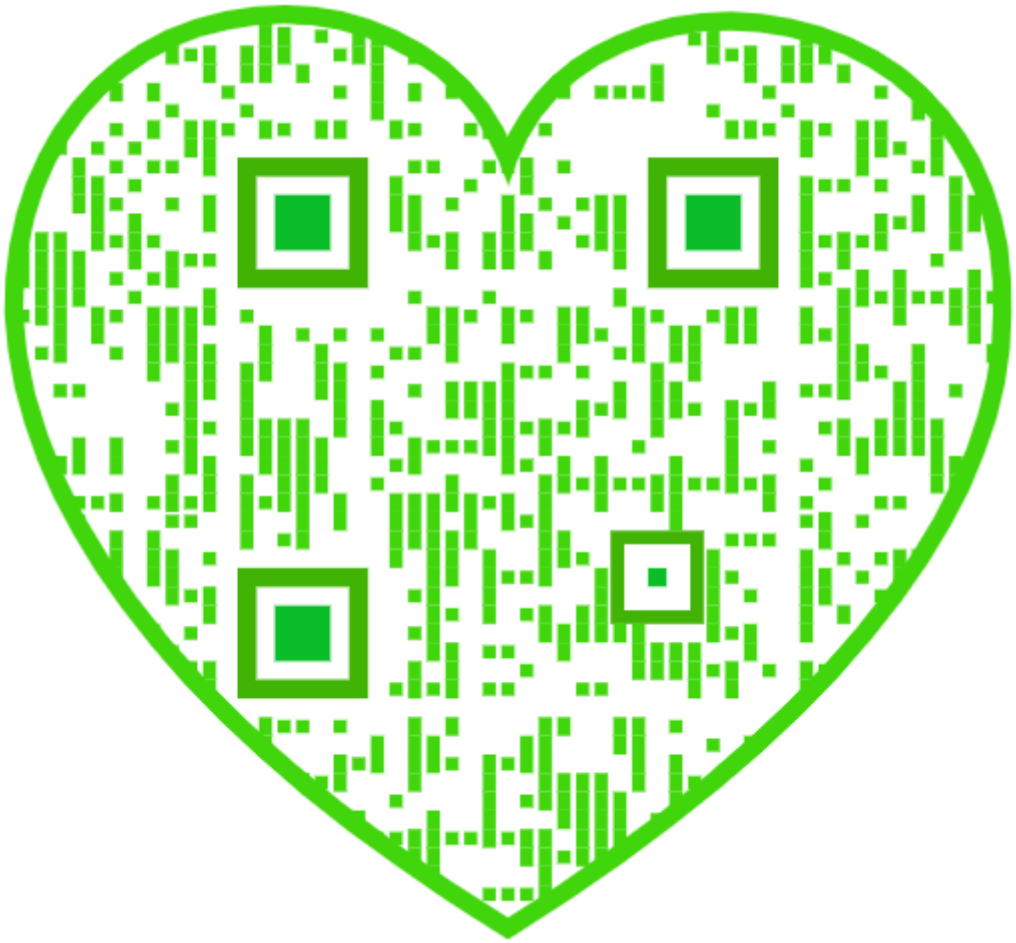

The Cooper Institute—A Noble Man.

On Saturday morning, the 17th inst., an event took place in this city, which should be heralded from end to end of our great country; it was the laying of the corner stone of the Cooper Institute. "And what about the Cooper Institute?" some one asks. Well, we will tell. One of nature's noblemen in this city named Peter Cooper, who commenced life a hard working man, has by industry, application, and judicious mangement, accumulated a large fortune. Not being one of those whose generosity leads them to be liberal when they have no further use of their money, that is when death knocks at the door of the heart, he has determined to raise a Free Institute, which in its designs for usefulness, will not have its equal in the world. The edifice is to be very large and beautiful, and we must say that the foundation of it, as already laid, is the best and most extraordinary one of any structure that has ever been erected in this city. The objects of this Institution are to open the avenues of scientific knowledge to the youth of our country, and it is to be placed, when completed and all arranged, under the control of men who will forever devote it in the most effectual manner, to the moral, mental, and physical improvement of the rising generation; to aid and encourage the young to improve and better their condition, by assisting their efforts to acquire that kind of useful knowledge which will enable them to find and fill valuable places where their capacity and talents can be employed, with the greatest possible advantage to themselves and the community in which they live. Provision is to be made by Mr. Cooper for a continued course of night and day lectures and discussions on the most useful and practical sciences, to be open and free to all who can bring a certificate of good moral character, from parent, guardian, or employer. There will be secured to our country perpetual courses of free lectures and instruction, in the science and philosophy of a Republican form of Government, something necessary for the preservation and security of the rights, liberties, and happiness of all. No religious opinions of any sect or party whatever, shall ever be made a test or requirement in any manner of form, as a condition of or for admission or continuance to enjoy the benefits of this institution.

These are noble aims; to the well-behaved sons of our mechanics and laborers, this Institution will afford the means of acquiring useful knowledge without money and without price, which otherwise they could not obtain. In Paris, free lectures on science and art are provided by government, and the most eminent men in that city are paid for lecturing to the people. In no country in the world has such provision ever been made before, by the beneficence of a private citizen; and we venture to make the assertion that the Cooper Institute will be the means of doing a thousand times more good to our country, than the Smithsonian Institute at Washington. Amos Lawrence made a splendid donation for the Lawrence Scientific School in Massachusetts, but it was as a drop in the bucket to that of the Cooper Institute. We like to see rich men doing good with their money while they live; he who gives with his own hand receives the blessing of them who are ready to perish. It was honest Allan Cunningham who said, in reference to the will of Sir Joshua Reynolds, the great painter, "it would have been more to his honor and fame if, instead of leaving legacies to such wealthy friends as Burke and Malone, he had done good with his riches while he lived; to the poor a little is a great boon: how much good he might have done by a guinea and a tender word kindly given."

The Imponderable Agents---No. 1.

There are in vogue two theories by which the phenomena of light are explained, the one that of Descartes, Huygens, and Euler, commonly called the undulatory theory, the other that of Newton and Brewster, known as the theory of emanations. The former of these we shall proceed to consider.

It is assumed that all space is filled with a subtle and highly elastic element called ether, which pervades the atmosphere and all transparent bodies, and that light is produced by its vibrations, as sound is caused by the undulations of air. Colors are produced by the different number of vibrations communicated to the ether by the vibrating body. The advocates of this theory maintain that light is in all respects similar to sound, and the colors are compared to the notes of an octave. A luminous body is repeatedly likened, by Euler, to a bell, and he teaches that opaque bodies are rendered visible by their being excited to vibration by the waves generated by a luminary.

Euler urges against the Newtonian hypothesis, that "as the rays of the sun must be everywhere crossing the rays of the stars, their collision must be violent in the extreme." But as he supposes light to be transmitted in wave lines, while Newton supposes it to move in direct lines, why is not his objection most weighty against himself? Carrying out the parallel with sound, what would be the result if an immense multitude assembled together, were each at the same time to shout with a different cry? Would a listener be able to hear distinctly the voice of any one? Most certainly not; yet gazing among the myriad orbs which spangle the starry vault, the eye can readily single the smallest, whose light is sufficient to affect it, and contemplate it, untroubled by the light of the more powerful luminaries shining in other parts of the heavens.

Euler also objects to Newton's theory because it does not satisfactorily explain to him the phenomena of color. He claims that it cannot be that opaque bodies are rendered visible by the light reflected from luminaries, because they appear the same under whatever circumstances they are placed. He supposes that opaque bodies have each a *tone* of their own, and that when their vibrations are excited by a luminary, they are consequently uniform. According to this, a rough steel plate vibrates in harmony with the color called grey, but when polished it vibrates in harmony with all the colors of the spectrum! Euler perceived the absurdity of this, and acknowledges that in the case of mirrors there is an actual reflection, but he might have spared himself the admission. Take a piece of white paper and cast upon it the solar spectrum. Different parts of this same sheet of white paper are vibrating in harmony with all the colors!

Euler also thinks it inconceivable that a luminary should be able to emit particles moving with the astonishing rapidity of light, but he finds no difficulty in conceiving it to be transmitted by undulations, because of the extreme rarity of ether. He says, were the air as rare and elastic as ether, sound would be transmitted with a velocity equal to that of light. Unfortunately for this hypothesis, it has been found that the conducting power of the air increases with its density, while wood and the metals are better conductors of sound than any other matter.

Neither is there any reason, if light be propagated by undulations, why it should always be transmitted in straight lines. Sound can move as readily in a bent tube as in any other. It has been said that light could not pass through an orifice and expand its undulations like sound, on account of the great size of the orifice compared with the extreme minuteness of the rays of light, but this is very unsatisfactory.

The reader will bear in mind that according to this hypothesis, the luminous body is compared to a bell, and light is produced by the undulations excited in the ether by the luminous body, the different colors being caused by a different number of vibrations in a given time.—According to this, a luminary emitting white light must at the same instant be vibrating at the different rates which produce all the colors of the spectrum! This is of course a palpable absurdity, as great as to suppose a bell capable of vibrating at the same moment in harmony with all the notes of an octave.

The failure of the advocates of this system to explain satisfactorily the refraction of light might also be urged against it, as well as the very unsatisfactory explanation of polarization, but we shall have more to say respecting this in another article, and we leave the subject to the candid consideration of our readers. In our next we shall review the theory of emanations, or the Newtonian theory generally received until the present century, by the English philosophers, but of late fallen in disrepute.

(To be Continued.)

Recent Foreign Inventions.

Depositing Alloys and Metals.—T. Morris, and Wm. Johnson, of Birmingham, Eng., patentees.—The invention consists in the employment of solutions composed of cyanide of potassium and carbonate of ammonia, to which are added cyanides, carbonates, and other compounds of metals, in proportions according to the amount of deposit required to be made.

In order that the invention may be fully understood and carried into effect, the patentees proceed to describe the means pursued by them as follows:—These improvements consist in the employment of solutions composed of carbonate of ammonia or the sesqui-carbonate of ammonia of chemists, and cyanide of potassium, to which are added carbonates, cyanides, or other compounds of metals, in various proportions. For the well known alloy, brass, carbonate of ammonia, and cyanide of potassium are used in the following proportions:—viz., to each or every gallon of water are added 1 lb. of carbonate of ammonia, 1 lb. of cyanide of potassium, 2 ozs. of cyanide of copper, and 1 oz. of cyanide of zinc; these proportions may be varied to a considerable extent. Or the patentees take the before-named solution of carbonate of ammonia and cyanide of potassium, in the proportion of 1 lb. of each to one gallon of water; and they take a large sheet of brass of the desired quality, and make it the anode or positive electrode, in the aforesaid solution, of a powerful galvanic battery or magneto-electric machine, and a small piece of metal, and make it the cathode or negative electrode, from which hydrogen must be freely evolved. This operation is continued till the solution has taken up a sufficient quantity of the brass to produce a reguline deposit. The solution may be used cold; but it is desirable, in many cases, to heat it (according to the nature of the article or articles to be deposited upon) up to 212 deg. Fah.; for wrought or fancy work, about 150 deg. Fah. The galvanic battery, or magneto-electric machine, must be capable of evolving hydrogen freely from the cathode or negative electrode, or article attached thereto. It is preferred to have a large anode or positive electrode, as this favors the evolution of hydrogen. The article or articles, treated as before described, will immediately become coated with brass: by continuing the process any desired thickness may be obtained. Should the copper have a tendency to come down in a greater proportion than is desired, which may be known by the deposit assuming too red an appearance, it is corrected by the addition of carbonate of ammonia, or by a reduction of temperature, when the solution is heated.—Should the zinc have a tendency to come down in too great a proportion, which may be seen by the deposit being too pale in its appearance, this is corrected by the addition of cyanide of potassium, or by an increase of temperature.

The alloy, German silver, is deposited by means of a solution, consisting of carbonate of ammonia and cyanide of potassium (in the proportions previously given for the brass), and cyanides or other compounds of nickel, copper, and zinc, in the requisite proportions to constitute German silver; it is, however, preferred to make the solution by means of the galvanic battery or magneto-electric machine, as above described for brass. Should the copper of the German silver come down in too great a proportion, this is corrected by adding carbonate of ammonia, which brings down the zinc more freely; and should it be necessary to bring down the copper in greater quantity, cyanide of potassium is added—such treatment being similar to that of the brass before described.

The solutions for the alloys of gold, silver, and other alloys of metals, are made in the same manner as above stated, by employing anodes of the alloy or alloys to be deposited; or by adding to the solutions the carbonates, the cyanides, or other compounds, in the proportions forming the various alloys—always using, in depositing, an anode of the required alloy. These solutions are subject to the same treatment and control as those of the brass.

Composite Metal—E. A. Chameroy, of Paris, patentee.—This invention relates to an ingenious system of manufacturing a commercially valuable metallic compound, possessing the several properties or qualities of solidity, hardness, facility of soldering, melting at low temperatures, and tractability in moulding to any required form, whilst its nature is peculiarly unchangeable. As the base or chief ingredient of this compound, Mr. Chameroy employs pounded or reduced iron ore, or reduced cast iron, or other metal difficult of fusion. Such matters are squeezed or pressed together into a solid mass, which is then soldered, so as to incorporate the particles well together, by the use of one or more metals easily fusible, at low temperatures, such as tin, lead, zinc, and bismuth; and, in order to prepare this compound metal, the patentee employs a furnace fitted with a damper for the regulation of heat at pleasure, and on this furnace is placed a cauldron, or metal receiver, to hold the materials. One part of some very fusible metal, either a mixture of lead and tin, or any other metalic compound possessing the property of fusion at low temperatures, and of tinning over or soldering a metal less easy to fuse, is now placed in this cauldron and melted. To this molten metal is then added about four parts of the pounded iron or pounded cast-iron, steeped in a solution of ammonia or chlorine, or other preparation capable of cleansing the metal. The mass is now well mixed together, so that the particles of iron may be well tinned all over, taking care to regulate the fire, so that oxydation shall not ensue. When so treated, the mass is fit for use, and it may be poured into moulds for being shaped into a variety of articles; such for example, as statues, columns, candelabra, fountains, and the like; as well as into cylinders, fly-wheels, pulleys, and other details, ordinarily cast in moulds. As this compound melts and cools down very rapidly, moulds composed of cast-iron, copper, or other hard metal may be used, so that the articles cast in this way may be turned out smooth and sharp, without requiring to be subsequently dressed. And as the metal is also malleable, it may be cast into plates of any required thickness, and then passed between rollers for mechanical reduction, in the manner of rolling out ordinary boiler plates.—Such plates are principally intended for roofing houses, and for general covering purposes; but they may be also employed in the manufacture of tubes, tanks, and sheets for various uses. The crude metal may also be run into pigs, in the usual way, and sold in that way for the usual casting or other manufacturing purposes.

Proposed Telegraph Communication between America and Europe.—J. B. Lindsay, of Dundee, who is at present in Glasgow, propounds a startling theory—that of forming an electric telegraph betwixt Great Britain and America, without employing submerged wires, or wires of any kind. At the meeting in the Athenæum, Mr. Lindsay illustrated his method. A large trough of salt water was employed, across which he transmitted the electric current, without any metallic conductor, the water itself being the only medium of communication. Mr. Lindsay explained that he had obtained similar results over a breadth of sixty feet of water. Some calculations have been made in regard to the expense, and Mr. Lindsay computes, according to his present information, that the cost of the necessary battery and land wires to establish a communication betwen that country and America, would not exceed £60,000.—[Exchange.

[The discovery of Lindsay is not new by any means. The result he obtained in sending a message by electricity through sixty feet of salt water, has been obtained by others through a greater expanse, long ago. It would be a great invention indeed, to send messages without wires through the ocean.

Rope Machinery.

Since the enquiry in our last volume respecting machinery for manufacturing ropes, we have been informed that Jonathan Crane, of Greenpoint, L. I., will build machinery for making ropes, he being the owner of J. W. Peers' patent for a machine that can make very superior hemp and cotton rope.

Important Notice.

Notice is given by the Directors that no more applications for space in the Crystal Palace can be granted. On Saturdays hereafter the price of admission will be but 25 cents.

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING SEPTEMBER 20, 1853.

SAWING STICKS FOR BROOM HANDLES—By T. J. Alexander, of Westerville, Ohio: I claim the method described, of handling and adjusting the log to its place, and to its various positions for the several cuts, by means of the radius rods or clamping screws, coupled and operated as specified, and suspended by a swinging frame, from above, arranged and operating together, as set forth; so that by bearing laterally on the screw lever or handle, whilst turning it, the clamping screws are swung laterally and raised or lowered simultaneously to approach the log on the table, and convey it with facility to the gauge, and to adjust the log expeditiously when under operation to its various sets, laterally and vertically, as described.

PLANETARY HYDRAULIC STEAM ENGINE—By Jas. Black, of Philadelphia, Pa.: I claim the Planetary Hydraulic Steam Engine, the arrangement of the vessels, pipes, and diaphragms: or their equivalents upon a shaft, so as to revolve with or upon said shaft, as set forth.

TURBINES (No. 1.)—By Uriah B. Boyden, of Boston, Mass.: I claim, first, the leaning and inclining of the leading curves or guides to the plane of the wheel, as described.

Second, the making of the inside of the garnature, or the part of the gate next the disc, or both, of such a curvature or form, that the water at the upper part of the stream or streams, where it leaves the garniture or gate, will have a downward motion, or a direction inclining to the plane of the water-wheel, descending or inclining to the plane of the wheel from the commencement of the passages next the gate to about half way from the inner to the outer edge of the upper rim of the wheel, where they are nearly or quite horizontal, or nearly or qulte parellel with the plane of the wheel; the inclination of that part of the lower surface of the upper rim of the wheel which is next the gate being the same or nearly the same as that of the lower surface of the gate next said upper rim, and the change from inclining to horizontal being gradual, as by a curve, or making the upper surface of the disc, next the lower rim of the wheel, to incline up towards this rim, and making the lower sides of the parts of the passages through the wheel, which are next the disc, ascending or inclining to the plane of the wheel, so that the stream or streams will gradually diminish in height at the entrance or entrances into the wheel, so that the water which passes in the upper parts of the stream or streams, will converge toward that which passes in the lower parts of the stream or streams, before striking the floats, and continuing this converging into the wheel to about one half the distance from the inner to the outer edges of the rims of the wheels.

Thirdly, forming of the lower part of the tobe which sustains the disc, and the forming the top of the disc, on that part of it next the tube, and fastening these parts together, as described.

I have, in sundry parts of this description and claim, for brevity, written of the turbine as having its common position, in which case the water descends, to pass between the leading curves without alluding to its ever having any other position, but I do not limit either division of my claim to the case, when it has the common position, but I extend my claim to the cases in which the wheel is vertical or inclined to the horizon, and to the case, when the water ascends to pass between the leading curves. nor do I limit either division of my claim exactly to the forms above described, but I extend my claim to all forms which are essentially the same.

TURBINES (No. 2)—By Uriah A. Boyden, of Boston, Mass.: I claim, firstly, the arrangement of a gate at the entrance of the water into the wheel, with a part or all of the garniture or lining and other parts of the turbine within, over, and about the gate, such that the gate and a part of the garniture, if any, be attached to it, may move freely, while the part of the garniture not attached to the gate, and other parts over and about the gate remain stationary, and so closely fitted that little or none of the water in the flume can run to the upper part of the gate, excepting by passing under the stationary garniture, and afterward upward, so as to diminish the liability of sediment, dirt, or other substances, being carried by the water to the upper part of the gate, or movable part of the garniture, if any be attached to the gate, so as to obstruct the motion of the gate, or movable part of the garniture, essentially as above described.

Secondly, the leaning or the inclining of the floats or buckets of turbines to the rims of the wheels, so that when the wheel of a turbine is working, with the gate next the wheel partially open, the parts of the floats opposite the aperture formed by such partial opening of the gate, will be forward of those parts next the other rim of the wheel, so that the leaning of the floats will diminish the spreading or deflecting of the streams into the part of the wheel opposite to the gate, essentially as above described, though I do not limit my claim to any degree of but extend it any inclination in clination which will substantially answer the same purpose, as this effect of inclining the floats, depends upon the streams only partially filling the wheel, I do not extend my claim to inclining the floats to any such turbine or hydraulic motor as has no gate at or near the water wheel, or other means of varying the width, thickness, or number of streams which enter the wheel.

Thirdly, the arrangement of the diaphragms or partitions in re-acting wheels, and in the wheels of turbines at different distaces from the rims of the wheels, in the spaces between the floats, to facilitate the regulating the motions of the wheels essentially as above described. though I do not limit my claim to any particular arrangement as to the distance of these diaphragms from the rims of the wheels, but extend it to all arrangements which operate substantially as above described:. But as the effect of these diaphragms depends on the streams only partially filling the wheels, I do not extend my claim to the arrangement of the diaphragms to such motors as have no gate next or near the water wheels or other means of varying the width, thickness, or number of streams which enter the wheel.

Fourthly, the combination of the device of making the gate at the entrance of the water into the wheel, to move separately from the garniture with leaning the guides or leading curves, which direct the water into the wheel, so that when the gate is partially open, the part of the water which passes by or near the surface of the gate, in flowing toward this passage into the wheel, made by such partial opening of the gate, has its motion directed the way the wheel turns, in consequence of the leaning of the said guides. I do not confine my claim exactly to any degree of leaning, but extend it to all degrees of leaning, which will essentially answer the same purpose.

I do not limit either of these four branches of my claim to such turbines or hydraulic motors as discharge the water at their peripherles, but I extend them to such as have the water enter their wheels at their peripheries.

HYDRAULIC MOTORS—By Uriah A. Boyden, of Boston, Mass.: I claim, first, the arrangement of the gates around and next outside of the peripheries of the water wheels, between the wheels and the guides, or other things which cause the water to move obliquely toward the wheels, in the way the wheels turn, when the water first strikes the floats or buckets, as described.

Second, the device to cause the height of the wheel or the position of the parts which partially confine the water which presses the wheel upward to vary, as the height of the water or fall varies, so that the width of the aperture, which lets the water escape from the place where it presses the wheel upward, varies proportionally to the quantities of water pressed into it, so that the force with which the water presses the wheel upward will be nearly or quite constant, though the height of the fall varies greatly.

Third, the combination of a gate around and near the periphery of a water wheel, between the wheel and the guides or other things which direct the water the way the wheel turns into the wheel, with the parts of the floats near the gate, curved so that the water will strike their concave sides, as described, though I do not limit my claim exactly to any curvature of the floats, but extend it to all curvatures which will essentially answer the same purposes: nor do I limit my claim to an annular gate between the wheel and the things which cause the water to move the way the wheel turns, before it enters the wheel, but I extend it to all things which will substantially answer the purpose of a gate, in varying the height, thicknes, width, or number of streams that enter the wheel.

Fourthly, the shape of the spaces between the rim of the water wheels, which the floats are fastened to, in which they flare towards the axis of the wheel, as above described; though I do not limit my claim to exactly the flaring described, but extend it to all flaring, which will essentially answer the same purpose.

The first, third, and fourth branches of my claim apply only to such hydraulic motors as have guides or other things which cause the water to move obliquely toward the wheels, in the way in which the wheels turn, and pass into the wheels at their circumferential parts, and after acting on the floats, discharge from the floats inward; I do not extend these divisions of my claim to the class of tub wheels and under-shot wheels, in which the water generally flows into the wheels in streams, with spaces between the streams, at which spaces the water does not flow into the wheels.

Though I have described these water wheels as being horizontal, and the gates as being opened by raising, it is obvious that all these four branches of my claim are quite applicable to wheels in other positions, and to cases in which the gate is opened by lowering, and I do not limit either branch of my claim to cases in which the wheels are horizontal, or to cases in which the gates are opened by raising."

RAZOR STROPS—by Alfred F. Chatman, New York city: I claim the metalic renovator in combination with the spring barrel, or its equivalent to operate on the strop, as specified.

I also claim the convex end and rest to elevate the center of the strop, as described and shown.

RAILROAD CAR SEATS—by Isaac Fay, of Cambridge, Mass.: I claim the combination of the groove, and one or more dogs as applied thereto, and made to operate for the support of the back, and to enable it to be elevated or its supporting pin raised out of the groove a, as described.

And in connection with the inclined notches and long slot of each bar, I claim the sliding bolt or slide as applied thereto, and used substantially in manner, and for the purpose as specified.

And I claim the convex and concave toothed racks in combination with the seat and the chair frame, the same being for the purpose of enabling the seat to be set with such inclination either forwards or backwards, as may be conducive to the ease and comfort of the setter, whether he be in an upright or recumbent position.

TOILET FURNITURE—by David Freed, of Huntingdon, Pa.: I claim the attaching or combining with a washstand, or any other toilet or chamber furniture, the brackets and bolt when said bolt is thrown against the brackets by means of a crank or knob at or near the top of the stand, through the levers or their equivalents, in the manner and for the purposes set forth.

PLOWS—by Samuel Hulbert, of Ogdensburgh, N. Y. Patented in Canada, Sept. 20, 1852: I claim constructing a mould board of a plow so that a horizontal line drawn at any height across its working side shall describe the convex arc of a given circle, and any line drawn across its working side at right angles to the base, shall also describe the convex arc of a circle, substantially as set forth.

SEED PLANTERS—by Samuel Jenkins, of Portsmouth, Pa.: I claim the peculiar shape and construction of the adjustable cutter, its passing through the drag bar and fitting in a dovetail in the point of the shovel, all in combination as described, for the purpose of allowing the tooth to pass easily over any obstructions, and especially to regulate the depth of furrow.

HEMP BREAKER—by Oliver S. Leavitt, of Marcellus, N. Y.: I do not claim as my invention the beating of flax or hemp straw into grooves for the purpose of divesting it of the shives or the woody portion thereof, or the use of rollers for moving the material to be broken, as that has been done before.

But I claim the combination of a reciprocating beater with parallel blades, set at decreasing distances from each other, with a fixed bar flated or serrated, to correspond with the blades and spaces of the beater.

DRAWING FRAMES FOR HEMP AND FLAX—by Oliver S. Leavitt, of Marcellus, N. Y.: I make no pretention to the use of gill bars attached to chains or wheels, in drawing flax, hemp, and other fibrous substances, as this has been often done before.

But I claim first, the particular form of gilt bar descibed in combination with the rocking lever, the dog and cam, or tappet, for the purpose of withdrawing the gill pins from the material, and directing the bars' backward movement set forth.

Second, the device by which the rods are pressed down for the purpose of making the gill pins penetrate effectually the material to be drawn, being operated by the lever in the manner set forth.

METAL DRILLS—by Warren Lyon, of New York city: I do not claim the weight attached to the arbor irrespective of the levers and counterpoise, nor do I claim any of the within named parts separately.

But I claim the combination of the weight, levers, and counterpoise constructed arranged and operating in the manner, and for the purpose as substantially shown and described.

FLUID CANS—by James R. Nichols, of Haverhill, Mass.: I do not claim as my invention, the helical spring and cork valve, as applied to other purposes than that of a decanting vessel or lamp feeder, but I claim the improvement upon the decanting vessel in the application to the same of a spring valve or valves, easily and coveniently opened by the thumb or finger while replenishing lamps, or decanting therefrom, whether said spring and valves be made and arranged in the manner as described, or other mode substantially the same, by which similar results shall be produced.

SEED PLANTERS—by Henry Perrin & Wm. Rudduck, of Wilmington, Ohio: We claim the method of supplying the distributing tube with grain or seed from the hopper by means of the reciprocating vibratory valve in the hopper, in combination with the cap and the discharging plate and receiving chamber, as described.

GRAIN AND GRASS HARVESTER—by Philo Sylla & Augustus Adams, of Elgin, Ill.: We claim first the weighted levers or their equivalents substantially as describe which carry the sickle bar and sickle, and allow them to vibrate perpendicularly, and accommodate the sickle to uneven ground, in cutting grass, which levers may be made permanent when cutting grain, as described.

Second, the linked or hinged brace, or its equivalent in combination with the levers, which brace prevents the sickle bar from being traversed longitudinally by the action of the sickle, but allows it to vibrate perpendicularly, and accommodate itself to uneven ground, as described.

Third, the stands of the binders constructed so as to allow them to stand so much lower than the horizontal platform that they can bind the gavels into sheaves with greater facility, far less labor, and much faster than by any of the modes heretofore practiced.

BLOW PIPES FOR ENLARGING BLASTING CAVITIES—by Ancil Stickney, of Norwich, Vt. Ante dated May 10, 1853: I do not claim the enlarging a drill hole by the use of heat or a blast of air thrown upon charcoal or other fuel in a state of combustion.

But I claim the process of enlarging the drill hole by means of an air blast and charcoal or other combustible fuel placed in the hole—the same consisting in the employment of a blast tube made with lateral perforations, and a closed or nearly closed bottom, as discribed—the same enabling me to attain the enlargement of a hole wit a great saving of labor and time, as set forth.

COMPOUND BLOW PIPE FOR ENLARGING BLASTING CAVITIES—by Ancil Stickney, of Norwich, Vt. Ante dated June 11, 1853: I lay no claim to the use of a blast of air or gas in connection with coal or fuel, for the purpose of supplying such with oxygen; but I claim an instrument for enlarging the drill hole by the employment of gasses as specified, meaning to claim the combination of the two jet chambers, the perforations or orifices and supply tubes, for commingling the gasses and disseminating flame therefrom, entirely around and against the side of the drill hole, whereby the enlargement of it into a suitable charge chamber may be speedily effected.

STEAM GENERATORS—by Abel Shawk, of Cincinnati, O.: I claim a tubular generator which has a forced circulation, and which while it lines the fire box, and is expanded in its diameter from above the fire box, to its termination, is connected to a steam chamber or receiver outside of or exterior to it, arranged in the manner described.

SAW FOR WATER WHEELS—By O. Willis, of McDowell, Co. N. C.: I claim an adjustable apparatus for sawing out the grooves or fillets in water wheels for the reception of the buckets composed of a two edged saw sprung between clamps, and connected by a screw rod to a sliding bar; when said sliding bar is made adjustable upon a radius arm hung to the center of the wheel, the whole being combined and operating as described.

COTTON STALK CUTTERS, OR PULVERIZERS—by George Gorman, of Lamar, Mass.: I claim the construction and arangement of a machine consisting of rotary whippers or reels on bars supported in a frame admitting of elevation and depression; said whippers being driven by band wheels on one or both supporting wheels of said machine, in the manner set forth for the purpose of effectually reducing the stalks of cotton and thus rendering them useful as a manure and in a condition to offer no obstruction to the plow in the after cultivation of the land.

Preservation of the Eyes.

MESSRS. EDITORS—An article in No. 51, Vol. 8, "Scientific American," having the above title, interested me much, as it is a subject that has occupied some of my attention. In my researches on this subject I have come to a different conclusion, in some respects, from that which is left on the mind by reading your article. While I can subscribe to most that is there said, I have had some confidence in properly rubbing the closed eye balls. If rubbed gently, or rather pressed from the temples towards the nose, in such a manner as shall have a tendency to keep up their roundness, by pressing the eye-balls (not on their surface, which will only serve to flatten them, and thereby injure the sight) against the nose as much as possible, but not so as to injure them by hard pressure, the sight may be preserved in this way to old age. It is said that this is the way that J. Q. Adams preserved his sight until he died, having no need of glasses. Also my grandfather, who died at the age of 93, could read all day in his Bible without glasses, having never used them. He said that at fifty years of age his eyes began to fail him, so that he felt the need of glasses; but hearing of the above remedy, applied it, and soon found his eye-sight improving, so that at sixty he could see as well as he ever could, and never lost his sight again while he lived. By severely taxing the eyes by reading or writing a great deal by candle or lamp light, the tendency is to flatten the eye-ball and weaken its power to adjust itself to distances. Anything that has a tendency to flatten the eye-ball throws the focal distance further off. Rubbing the eye-balls, as is usually the case with most people, and especially those of weak or inflamed eyes is exceedingly injurious. If they rub them at all let care be taken not to rub them on the pupils, but press them gently towards the nose, so as not to flatten them, but to preserve their roundness. The reason why so many young people lose their eye-sight, I think, may be attributable to two causes, namely, over-taxing them, which makes them painful, and then rubbing them. If these two evils are guarded against, I think there would not be such demand for glasses. I would recommend those who are naturally short-sighted, to take Ball's eye-cups, and draw a piece of thin india rubber over one end, instead of the balls; then tie it over the eye so as to press gently upon the eye-ball, and wear it 5 or 10 minutes before going to bed; this will flatten the eye-ball, and thus lengthen the focal distance. T. S. I.

Elyria, O., Sept. 1853.

Singnlar Plan for a New Line of Steamships.

MESSRS. EDITORS—Being a subscriber to your valuable paper, and admiring the manner of your dealing with new suggestions in science, arguing dispassionately, and giving reasons for or against, without foolish sneers or personalities, I take the liberty of sending you the following for thy opinion. Seeing the gigantic efforts of late for rapid and safe communication between the nations of the earth, I am induced to make the inquiry—"Would it be possible to construct a 'train' of steamers, say of 25,000 feet, or more, by connecting a number of vessels by joints, so as to make it one great flexible vertebral column;"—of course there could be no stem or stern, as at present, to each vessel, only batted to each other and secured by a large band of India rubber, say ten or twelve inches thick, by three or four feet wide, all round inside, with a close ladder of strong slack chains all round outside, with as many pairs of steam paddles along the 'train' as would be thought necessary. The question arises, could it be made sufficiently flexible to adapt itself to the ridge and hollow of large waves in rough weather, and also be under command for alteration of course, &c. I take it there would be room enough on the line without danger of running off. I need not enter into the many details that would suggest their adoption, except merely to say the india rubbber bands might be secured by broad washer-plates, with some substance between, say leather or gutta percha to preserve the india rubber. W. C.

Clonmell, Ireland, Sept. 8, 1853.

[Provided the plan proposed by our correspondent were carried out—a band bridge of ocean steamships—we do not see what benefits could be obtained—what evils such a line would remove, or what new objects it would accomplish. Such a line of steamship, however, would be entirely impracticable.

Labor and Money Power.

The eloqent Rev. Mr. Chapin, thus speaks of the achievements of labor. He asks "who can adequately describe the triumphs of labor, urged on by the potent spell of money. It has extorted the secrets of the universe, and trained its powers into myriads of forms of use and beauty. From the bosom of the old creation, it has developed anew the creation of industry and art. It has been its task and its glory to overcome obstacles. Mountains have been levelled and valleys been exalted before it. It has broken the rocky soil into fertile glades; it has crowned the hill-tops with fruit and verdure, and bound around the very feet of ocean, ridges of golden corn. Up from the sunless and hoary deeps, up from the shapeless quarry, it drags its spotless marbles, and rears its palaces of pomp. It tears the stubborn metals from the bowels of the globe, and makes them ductile to its will. It marches steadily on over the swelling flood, and through the mountain clefts. It fans its way through the winds of ocean, tramples them in its course, surges and minges them with flakes of fire. Civilization follows in its paths. It achieves grander victories, it waves more durable trophies, it holds wider sway than the conqueror. His name becomes tainted and his monuments crumble; but labor converts his red battle-fields into gardens, and erects monuments significant of better things. It rides in a chariot driven by the wind. It writes with the lightning. It sits crowned as a queen in a thousand cities, and sends up its roar of triumph from a million wheels. It glistens in the fabric of the loom, it rings and sparkles from the steely hammer, it glories in shapes of beauty, it speaks in words of power, it makes the sinewy arm strong with liberty, the poor man's heart rich with content, crowns the swarthy and sweaty brow with honor, and dignity, and peace.

An Important Fact in Connection with the Yellow Fever.

The New Orleans "Delta" states that Capt. Baxter, of the steamer "Cherokee, left that city on the 12th of last month, when the epiedemic was at its height, with one hundred and sixty-nine passengers, the majority of whom were unacclimated, and liable to the yellow fever. When the Cherokee emerged into the Gulf, the sea was rough, and the passengers suffered a great deal from sea-sickness. Every one of them were compelled to vomit, and the Captain says he never had a more unanimously sick set. Soon, however, it was all over, and health and hilarity reigned on board, when the yellow fever made its appearance among the crew, none of whom had suffered from sea-sickness. During the voyage, there were ten of the crew down with the fever, and on the arrival of the Cherokee in New York, there being two still sick, they were ordered into the hospital, where one of them died. The other recovered. Not one of the passengers had the fever. They were all permitted to land in New York after eighteen hours, and the sick members of the crew were alone compelled to go into the hospital detention. Here is an interesting fact for the doctors. A general vomiting saved over one hundred persons from a disease which attacks nine out of ten of the unacclimated. Is not, too, the universality of the sickness a fact of some significance from which the physicians may extract some light on the subject of the character of the disease?

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New Inventions.

New Picking Machine.

A machine has been recently invented by R. Kitson, of Lowell, Mass., which we should judge possesses several features of novelty and usefulness. The object of the machine is to get rid of the impurities contained in the cotton or rags to be picked, by blowing them out at the time of picking, instead of subjecting them to a second operation for this purpose; and also consists in a new mode of attaching the picking teeth to the cylinder. The machine contains two cylinders, having within them fan blowers creating a strong blast, which passes throug openings in the periphery of the cylinders, and forces the dirt and dust through other openings in the concaves. The shanks of the teeth are shouldered even with the face of the cylinder, and after they are driven home, a metallic plate having notches of the same size as the teeth above their shoulders, is screwed firmly upon them, thus rendering it wholly impossible for them to escape until all the screws in the plate give way. We cannot see why this should not be a good invention. The inventor has applied for a patent.

Improved Steam Hammer.

J. L. L. Morris, of Reading, Pa., has invented an improvement upon steam hammers, and has taken measures to secure a patent. Instead of connecting the hammer block rigidly to the beam of a steam hammer, as in the helve hammer, it is suspended from it and works between slides; by this arrangement two great advantages are obtained. 1st. The hammer is constrained to strike with its face parallel to the anvil, whatever may be the thickness of the metal. 2nd. It admits of a peculiar arrangement of a latch-lever, trigger, and jaw, by means of which the shock caused by the percussion of the hammer is prevented from being communicated to the rest of the machinery. This latter object is attained not only by the loose connection of the hammer to the beam, but by means of the contrivances mentioned, and a modified form of steam valve; the steam is admitted above the piston before any shock can have taken place. This invention promises to be exceedingly useful, and we bespeak for it the attention of those interested.

Improvement in Cotton Gins.

Leonard Campbell, of Columbus, Miss., has recently invented certain improvements in cotton gins, and has applied for letters patent thereon. The improvement consists in the employment of a concave, constructed with a series of passages, in which the ginning saws work; the sides of said passages being covered with bristles or other elastic substances, for the purpose of more effectually freeing the cotton from impurities as it is drawn through the passages by the saws. This concave is also provided with a series of brushes which, in combination with the brush fan of ordinary gins, spread the cotton evenly upon its discharge. This invention has been tested and proved highly satisfactory.

New Metallic Packing.

Henry L. Russell, of Hudson, Mich., has applied for a patent upon a new metallic packing for the pistons of steam engines. It consists in expanding the rings of ordinary metallic packing, by means of levers actuated by a ring, which is retained in its proper place by a coil spring, ratchet wheel, and pawl, or other equivalents, all of which are situated within the drum or piston head. Quite a novel plan.

Improved Bedstead.

J. Johnson, of Genesee, N. Y., has applied for a patent upon an improved bedstead. His improvement consists in connecting the end and side rails permanently together, and covering the rectangular frame thus formed, with a wire network instead of the cords commonly used. The upper and lower portions of the posts are made separate, and are united together, and to the frame, by means of screws. It forms a very easy and convenient method of putting together a bedstead.

A number of fatal accidents took place on the Hudson River Railroad last week.

Washing and Steaming Cotton Goods.

G. J. Prentiss, of Fall River, Mass., has taken measures to secure a patent for an improvement in washing machinery, whereby pieces of goods in bleaching and calico print works, may be washed, steamed, and rinsed with great facility. The nature of the invention consists in placing the ordinary dash within a cylindrical jacket connected with a steam boiler by suitable pipes, and also with a cold water tank, and one containing soap suds, all properly arranged, whereby hot and cold water may be admitted to the dash wheel as required, and the goods properly washed or steamed, as may be desired.—The dash wheels at present in use have not been improved in principle nor in operation for a century. They are only used for washing with cold water, but also can admit and work with ley and suds by a branch pipe ejecting the liquor through the wire around the boxes. We have always thought that a great improvement might be made by the employment of hot water in washing, especially in very cold weather, and more particularly for soured goods. One gallon of hot water is more effectual in removing the hydro-sulphuric acid from bleached goods than five gallons of cold water.

IMPROVED PADDLE WHEEL.

Figure 2.

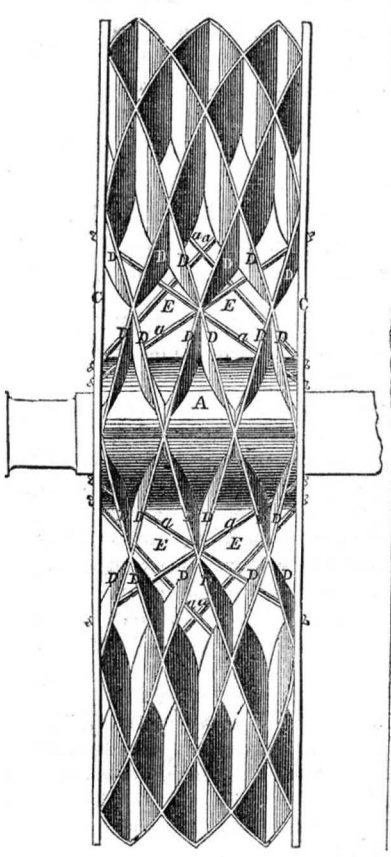
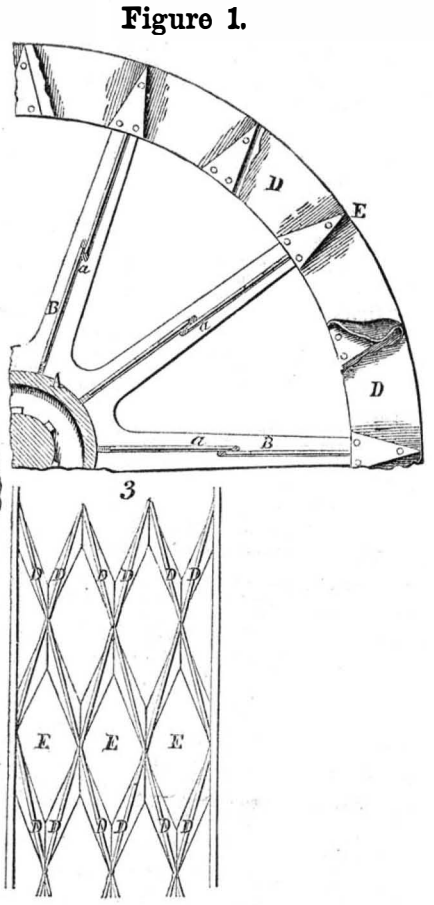


Figure 1.



These engravings illustrate an improved paddle wheel, invented by Benjamin Irving, of Green Point, N. Y., and patented Sept. 6, 1853.

Fig. 1 is a one-quarter view of a section perpendicular to the axis; figure 2 is a front view and fig. 3 shows a number of the floats.

This invention consists in so arranging and combining the floats, that they shall form a series of rhomb-shaped buckets around the wheel; this is done to avoid the concussion consequent upon a flat stroke of the paddles upon the water; another object is to hold the water in an unbroken sheet during their action upon it, thus rendering them more effective in the propulsion of the vessels to which they are applied. By reference to the engravings and description this action will be clearly understood.

A is the axis or hub of the wheel; B B are the radial arms, to which are attached the floats, D D. These are arranged with their outer edges in lines running spirally around the wheel in opposite directions, at angles of 75° to the axis, more or less; the crossing of the said lines forming a number of rhomb-shaped buckets, E E, which have no openings except in a radial direction to the wheel. The inner openings of the buckets are contracted endwise, to prevent back-lift in rising from the water, which causes them to depart from the rhombic form as the side angles are truncated, making the shape of said openings six-sided. The floats are made of sheet-iron, and are united to each other and to the rings, C C, by bolts or rivets. The number of buckets will depend on the width of the wheel; three, which the inventor considers the proper number, are shown in the engravings. It will be perceived that a number of half-buckets are unavoidably formed inside the rings.

It will be remembered that V-shaped floats have been previously used, but no wheel has been hitherto constructed in which one float combines with the ones succeeding it, to produce a rhomb-shaped bucket.

The advantages claimed by the inventor for this wheel, are, first, greater strength to resist shocks, occasioned by concussion with ice or floating logs; second, that it will admit of being more deeply submerged in the water than ordinary wheels, thus adapting it to vessels which are at times heavily laden; 3rd, that it will require a less number of arms; 4th, that the disagreeable jar unavoidable in vessels propelled by the ordinary form of paddle wheel is entirely obviated; 5th, that it may be used in canals, as the waves created by it are but slight, and 6th, that from its capability of deep submersion it is well adapted to ferry-boats, where the shafts are necessarily below deck. We sincerely hope that those interested will give this wheel a fair trial, as we think it worthy.

For further information address the inventor, Green Point, L. I.

Treenails.

Treenails are simply wooden bolts or pins, and their merits in ship-building are fairly and clearly set forth in the last number of "Griffith's Ship-builder's Manual." In that work we learn that treenails have been excluded from our navy for twenty years, and bolts substituted.

In the early part of the present century the English merchants and ship companies condemned all treenails but those made of English oak; but they have since discovered that those made of locust timber are much better. "There is no better timber," Mr. Griffiths asserts, within the orbit of his knowledge, "than locust." He presents some forcible reasons for their use, as being in some respects superior to bolts. The quality of a treenail can alway be determined by its outside appearance,—not so with an iron bolt; it may have an interior flaw, which, in the hour of severe trial, may be the means of doing great mischief. The octagon (eight sides) is the best form of treenail, and the reason of this is obvious. The hole is bored round for the reception of the treenail, and as the wood of the latter is harder than the plank, it cuts its way in and becomes much tighter than a circular treenail could. The octagon form of treenails also prevents them being started so easily as a round one, hence in every respect they are much better.

Mechanics Fairs.

The time is at hand for the annual fairs held by the various mechanics' institutes and mechanics' associations of our populous towns. The pioneer institute of America, the Franklin Institute, of Philadelphia, which held its first fair in 1824, will exhibit this year, in the Museum Buildings of that place, from the 18th to the 29th October. The seventh exhibition of the Massachusetts Charitable Mechanics' Association will be held at Faneuil and Quincy Halls from the 14th inst. to the 1st October. The Maryland Institute opens in Baltimore on the 3rd October, and the American Institute, at Castle Garden, in this city, on the 6th of the same month.

We hope our friends of the American Institute will improve the present opportunity of catching up to the times. We understand that many applications for space have been made at the Crystal Palace which could not be received for want of room. Now, by a little judicious management on the part of the Institute, we do not see why these could not be obtained to take the place of those articles with which we have been so often entertained. This indeed would subject them to the expense of getting up a new catalogue, instead of using their stereotyped plates, but then we think it would probably pay this year, as there will be very many strangers in the city to visit the Crystal Palace, many of whom will no doubt visit their Fair.

The Old Crystal Palace in a New Place.

When the old Crystal Palace in London was taken down, it was purchased by a wealthy association for re-erection at Sydenham, a few miles from London, there to be made into a public Garden and Museum of the fine arts: when finished it will be the wonder of the world. It is to be fitted into several courts, to represent the arts connected with their names; such as Egyptian works of art, in the Egyptian Court, Grecian works of art, in the Grecian Court, &c.

This Palace is proceeding rapidly towards completion. By our foreign exchanges we learn that the Pompeian Court is the most advanced; the colored decorations being to a considerable extent completed. The Egyptian Court has also taken shape; so also the Greek Court. The collection of casts from antique statues will nevertheless render this a very attractive point in the exhibition. The shell for the corridors and doorways forming the Byzantine, Italia-Mediæval, Gothic, and Renaissance Courts is being rapidly constructed; and in the gallery is a marvellous collection of casts from all parts of the world, destined to occupy the floor and walls of the apartments thus being prepared for them. It is impossible to form a just conception of the extraordinary whole which the Crystal Palace will present, when the numerous ideas now all working towards fulfillment are realized and opened to the inspection of the world.

Our Prizes.

We must be pardoned for again calling attention to our Prizes, as we do not want our friends to miss the opportunity of benefitting themselves and us by laboring to secure them. They must also bear in mind that it will be necessary for them to send in their orders early, that they may secure the back numbers, as we are receiving subscribers at the rate of twenty-five hundred a week, and although we have printed a very large edition, yet, at that rate, it will be ere long exhausted. Mechanics seem to be waking up to the importance of securing for their leisure hours a journal which shall be emphatically their own—and they have learned that the "Scientific American" is the very one they want.

We would invite the attention of our readers and cotemporaries to an article on another page, headed "The Imponderable Agents." The subject at least is of some importance, as it lies at the foundation of physical science, and we promise that there shall be an endeavor, on our part, to make our explanations intelligible. We shall, before concluding the series of articles, offer a solution to the question, "What is Gravitation?"

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Scientific American.

NEW YORK, OCTOBER 1, 1853.

Sewing Machine Controversy.

There never was a useful invention of any importance brought before the public to which there was not more than one who laid claim to be the inventor. As it has been, so will it be, for human nature is the same in every age, and every country. In the performance of our duty to inventors and the public, we have endeavored in all controverted patent cases to be impartial in examining the claims of each inventor, and in giving every one his just meed of praise. Such a course is never satisfactory to those who claim too much, but it is the only honest course—the one we humbly endeavor always to pursue. It is but a few years since there was not a single sewing machine in our country—not one—now there are some thousands of them, and their value and importance are becoming better known every day. The first sewing machine brought to our notice, was the one of E. Howe Jr., of Cambridge, Mass.—It was very favorably noticed in the Commissioner of Patents' Report of 1846, but although this sewing machine was noticed in the Scientific American a short time after the patent was issued, we never saw one of them in operation until 1849. The chief merit of Howe's machine consists in being the first which sewed the lock stitch—that is, using two threads, one on a needle and the other on a shuttle. In 1848 the sewing machine of Johnson & Morey, of Boston, was exhibited in this city, but it made only a running stitch and was far inferior to Howe's. Since that time Singer's and Wilson's sewing machines, have become very prominent, all using the lock stitch of Howe, but employing somewhat different devices to make it. The claim for making the lock stitch is the grand subject of controversy, for no sewing machine, excepting one using two needles making a shoemakers' stitch, is of any use without it. The claims set up to overthrow those of Howe, as to the originality of the lock stitch, are those of Walter Hunt, of this city. In a patent trial which took place at Boston, and noticed by us in our last volume, evidence in support of Hunt's claims were presented, but the trial terminated in favor of Howe. There has been a sharp controversy for some time between Singer and Howe, the former using the asserted claims of Hunt to strengthen his position before the public, and as a handle to the dispute, W. Hunt—either for the purpose of frightening or befooling others—presented himself before the public in the following card, which was published in the "New York Tribune" of the 19th inst.:—

"To the Public.—I perceive that Elias Howe, Jr., is advertising himself as patentee of the Original Sewing Machine, and claiming that all who use machines having a needle or needles with an eye near the point, are responsible to him. These statements I contradict. Howe was not even the original patentee; John G. Greenough and George R. Corliss, each had a patent on a Sewing Machine before Howe obtained his patent, as the records of the Patent Office show. Howe was not the original and first inventor of the machine on which he obtained his patent. He did not invent the needle with the eye near the point. He was not the original inventor of the combination of the eye-pointed needle and the shuttle, making the interlocked stitch with two threads, now in common use. These things, which form the essential basis of all Sewing Machines, were first invented by me, and were combined in good operative Sewing Machines which were used and extensively exhibited, both in New York and Baltimore, more than ten years before Howe's patent was granted.

By law no other person than myself could, or can, have a valid patent upon the eye-pointed needle and shuttle, or any combination of them. The proof of these facts is abundant and conclusive. I have taken measures as soon as adverse circumstances would permit, to enforce my rights by applying for a patent for my original invention. I am by law entitled to it, and in due course no doubt will get it. In that case, Howe's license will be no protection against my just claims; and I shall then ask, and insist upon, a just compensation from all who use my invention. All who feel an interest in this subject can, by calling on me, receive the most satisfactory evidence that I was the first and original inventor of the Sewing Machine.

Walter Hunt."

We publish this card in full, because it presents topics of great importance to patentees.—We take a positive position in opposition to the claims and assumptions set up in this card, and will give our reasons for so doing. Mr. Hunt *may* have invented what he claims, but at this date, when the value of such machines have been brought into public notice by others, and seven years after Howe obtained his patent, it has rather an ugly appearance to set up ten years' prior claims to the lock stitch and eye-pointed needle. Since the time when it is asserted he invented his machine, he found means to obtain patents, and to induce others to purchase inventions of far less importance and value; how came this one to be neglected? We are opposed to such rusty claims, especially by one so well versed in patents and inventions. The Commissioner of Patents, we believe, will never grant them; he is too good a lawyer to do so. If it can be proven that sewing machines, embracing the lock stitch and the eye-point needle, were on exhibition and in use in 1843 and no patent applied for, and that the inventor suffered Howe's patent to be uncontested for two years, then, as we understand the law, the invention for which he sets up his claims will become public property. This setting up of new claims for 17 year old private unclaimed inventions, is something we condemn heart and soul, especially when those claims are set up by persons who deal in inventions. This is a case wherein the importance of the *scire facias*, as an amendment to our patent law, comes prominently into view; and we hope that it will be added at our next sesion of Congress. We want to see the means provided by law to settle such controversies with dispatch, in order that the ear of the public may not be used as a kettle drum on which to beat the loudest tones for personal purposes.

Electrotyping.

This art, as applied to the deposition of metals in forming metal plates of type and figures for printing, presents a striking example of the advancement of science and art, and their application to new and useful purposes. The stereotype is an art which has long been in use; the publishers of books usually send their composed types to the stereotypers, where a cast of each page is taken in plaster of Paris, thus forming a negative mould, into which type metal is run and moulded into thin metal plates of positive type, fac similes of the original as set up by the compositor; this art saves the re-setting of type for re-prints, as these plates can be laid away and kept ready for printing future editions. This art, it appears, is destined to be superseded by the electrotype. It has been demonstrated that electrotyping of pages of type and engravings on wood can be done quicker and in a very superior manner to stereotyping. By the electrotype process an impression is first taken in wax, and the mould thus formed is dusted with finely powdered plumbago. It is then set in a vessel containing a solution of the sulphate of copper, and placed in the circuit of a galvanic battery for about twelve hours, when, on being taken from the same, it is found that the galvanism has deposited a positive type plate of pure solid copper from the solution, on the wax mould, from which innumerable impressions may be taken. As applied to the duplication of wood engravings, we have lately had an evidence of its power and usefulness in the beautiful title page which adorned the last number of Vol. 8, "Scientific American;" it was printed from an electrotype copy of a wood original.—So perfect is the lightning in copying original engravings, that under the most powerful microscope, it is impossible to detect the least variation between the original and its duplicate. This engraving was electrotyped by Messrs. Filmer & Co., whose establishment is in the same building with ourselves. Electrotype plates print much better than common type; the ink comes off clean every impression, and there is no filling up of the lines. This is certainly a very great recommendation to it, besides that of its great hardness, whereby it is enabled to print several million impressions. Electricity is now performing wonders in many of the arts, and to no one is it more successfully and usefully applied than in producing solid metal type plates for printing; and as these are so much superior to stereotype plates, and can be produced as cheap, it appears to us that they must soon supersede them entirely.

Explosive Fluids---A Warning.

On the evening of Saturday, the 17th inst., while two young women were employed in putting up what is termed "extract of orange," in small bottles, in the drug store of Alcott, McKisson & Robbins, No 127 Maiden Lane, this city; one of them, named Elizabeth Nevin, was so severely burned by an explosion, that she died next morning in great agony; the other young woman named Eliza Toll, was severely but not dangerously burned. The Coroner's Jury in their verdict, censured the firm mentioned above for not informing their employees of the dangerous qualities of the fluid. The extract of orange named above was mostly composed of alcohol, and the young women were not informed of its explosive qualities, so that they innocently were emptying a can of it, one of them holding a lamp when the vapor took fire and caused the heart-rending accident. The firm that employed these young women for the purpose spoken of, without warning them of its dangers, deserve more than censure, they are culpable; but then they are no worse than many heads of families in our land who have alcohol, and volatile hydro-carbon burning fluids in their houses, where there are many children. Alcohol and all fluids which are composed in a great measure of hydrogen, are very dangerous, from liability to explosion—not that alcohol is explosive in itself, but it becomes so when mixed with eight volumes of the atmosphere, and the alcohol in the extract of orange no doubt evaporated while being poured from the can in the above case, and mixing with the atmosphere until it was saturated with oxygen, it ignited at once like gunpowder, when the flame of the lamp was brought in contact with it. These remarks we trust will be the means of warning many against the dangerous explosive properties of alcohol when mixed to saturation with the oxygen of the atmosphere.

Colonial Patents.

On more than one occasion we have spoken of the great oversight in the new Patent Law of England, which contains no provision for the citizens and natives of other countries than Great Britain obtaining patents in the Colonies. We hope our Canadian neighbors will bestir themselves during the next session of the British Parliament, and get a bill passed to remedy the legal defect to which we have alluded.—Every Province having a Parliament should have the power of granting patents for new inventions and discoveries, to the citizens of all countries. Our friends on the other side of the St. Lawrence should not rest satisfied until this object is attained. It would be well to reduce the fees for Canadian patents to the same standard as that of the United States; we certainly have no objections to the reduction of our fees to Canadians upon the same principle. In the present state of things, it is an act of great injustice to American inventors, to exclude them entirely from obtaining patents in Canada and other Provinces of Britain, while any subject of England can obtain a patent in the United States. A valuable improvement may be invented by an American, for which it would be of some benefit to obtain a patent in Canada, but he cannot, and his invention may therefore be pirated with impunity by any person across the northern line.

Reaping Machines before the Royal Society.

By our foreign exchanges we learn that at the trial which took place this year before the Royal Agricultural Society, at Pusey, in England, Bells' Reaper obtained the Society's premium by the unanimous vote of the Judges. There were two of McCormick's Reapers, two of Obed Husseys, and one of Bell's tried—Mr. Hussey being there and working his own machine. The Bell Reaper was invented in 1829, the inventor being then a student for the ministry. A model of it has been in the Highland Society's Museum since 1830. The Scotch papers, in noticing the triumph of this old reaper, indignantly rebuke the contemptible want of spirit and good sense in the leading agriculturists of Britain, for neglecting to use it, until their attention was directed to the importance of such machines by the American reapers, which were tried during the World's Fair, in 1851. Well may our foreign cotemporaries rebuke the "let-well-enough-alone" spirit which characterizes the majority of British agriculturists in respect to labor-saving machines. There is no people in the world that exhibit so much good sense respecting the value of such machines as the American. This is one reason why our country has attained to such an elevation in power, wealth, and greatness in the short career of its independent history.

The Steamship Golden Age—The Ignorance of Journalists.

The fine steamship Golden Age, built in this city, made her trial trip down the Bay on the 19th inst. Her engines are strong over-head American beam engines, like many of our California steamers. In respect to the Golden Age, one of our daily papers made the following remarks:—

"It is the first attempt to work so large an ocean vessel by the American beam engine.—Theorists, from Dr. Lardner down, have denied the practicability of carrying such a weight of machinery so far above the keel of the ship as is made necessary by the construction of the walking beam engines, hence they have invented and put into every British steamer the side lever engine, which is far more complex, heavier of course, occupies more room, requires more power to drive it, and more fuel to get the power, and in case of accident is far less accessible for repairs. The success of the California steamers, and more lately of the yacht North Star, have convinced many of our builders that the American beam engine may yet become the marine engine of the world. If this experiment does not prove a failure, British builders will revise their philosophy touching these matters, and give their theories another overhauling."

[Why did not the editor who penned the above, call Messrs. Stillman & Allen, Charles Copeland, and the deceased able engineer, John Faron, "theorists," for putting side lever engines into the successful Collins' line. The side lever engine was used in British steamers long before Dr. Lardner knew the difference between an over-head and an under-beam (side-lever) engine. The above editor does not appear to have ever heard of such a kind of engine as the oscillating one, which is used on many British steamships, and he is profoundly ignorant of the fact that neither the steamships City of Glasgow, Manchester, nor the Glasgow (the latter running between this city and Glasgow) which are furnished with British engines, have side levers, but overhead beams. The engines, however, are not the same as the American long stroke beam engine. Those who are ignorant of such things should be cautions about making comments; they make our own and foreign engineers laugh at the engineering erudition of some of our daily press. We wish the Golden Age all success, but the yacht North Star has afforded no proofs of commercial success yet, that is in comparison with steamships having side lever engines. It is only by comparing the working expenses of large steamships for a number of years, that we can arrive at a proper estimate of the one that is the most economical. One steamship may run with a few tons of coal less on a voyage than another, but may cost ten times more for repairs.

Fine Writing.

We have received from T. B. McDowell, of Bolivar, Tenn., two cards, on one of which is written the Lord's Prayer in a circle one-fourth of an inch in diameter, and on the other is written the Ten Commandments, in an annular ring one-half an inch in diameter and one-eighth of an inch wide. By the aid of a microscope we have read them, and find them distinctly written. This beats all the fine writing we have ever seen or heard of. We shall place them on exhibition in the Crystal Palace.

The yacht "North Star" arrived at this port on the 22nd inst.

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General Remarks.—The Exhibition may now be considered as complete—there is yet a very little to be arranged, but those who have been waiting to see the achievements of intellect, as manifested in the triumph of mechanical art over mere brute force, may at last come on: the poetry of motion may now be seen, not only in revolving spheres, but in the noiseless throes of the huge steam engine, in the harmonious movements of wheel and lever, of shaft and pulley. It is not that there is so much to be seen, but that he who looks with a penetrating eye upon the lathes, and looms, the gins and drills and shears—in short upon the multifarious variety of devices for accomplishing, by the power of the elements, that which human muscles and sinews once sought to perform, cannot but be impressed with the idea that intellect, not might, must rule. We can not, as American citizens, avoid a feeling of honest pride. John Bull pointed sneeringly at the empty space of the American department in the London Fair: but although we had little interest in advertising our wares among them, while America is their great market, the tables are completely turned. It would seem that there was an expectation of an immense rush towards the English Department, from the wide aisles and the empty spaces there to be found, but although they exhibit many things of great artistic merit, who can point out to us a Hobb's lock, a McCormick's reaper or the model of an America? Or where among the many statues, not of Italy, the home of the fine arts but of all Europe, indeed; is there a group that can compare even with that of Hiram Powers? But enough of this.

In taking a cursory view of the interior of the Palace the other evening, we could not but admire the Austrian Department, under the charge of Charles F. Loosey, Austrian Consul at this port. Its general neatness is highly commendable,—it looks as if the most had been made of the space afforded. And we will here remark that no one should fail seeing the Palace by gas-light—the exterior view, when it is lighted up at night, brings vividly to our remembrance the tales of enchantment: the vast Naves glowing with resplendent light,—the massive dome flashing with the brilliancy of a thousand luminaries, remind one of the palace created by the magic powers of Aladdin's lamp.

We wish here to call the attention of the Directors to their catalogues: we heard many of those who had purchased the general catalogue complaining because it did not contain the paintings also. Some thought the plan of having two catalogues an intended shave,—it certainly has something of a catch-penny appearance. We complained most because we could not procure one of the latter at all.

Such has hitherto been the incompleteness of the exhibition that it has been wholly impracticable to form any systematic plan for our descriptions, but as it may now be regarded *as an entirety* we shall be enabled to proceed more definitely. We shall give our attention this week to

Machinery for Manufacturing Cotton.—First come cotton gins. E. Carver and Co., of East Bridgewater, Mass. exhibit a machine which, for beauty of exterior finish, resembles more an ornament for the parlor than a machine for the plantation, yet it is none the less a durable and efficient implement. The bearings of the saw-cylinder are hung in a box, suspended on the universal-joint principle. It also contains certain improvements in the manner of forming the grates, secured by Letters Patent.

Calvert & Sargent, of Lowell, Mass., show their improved gin with a burred cylinder, instead of ginning saws, which was patented in January and October, 1848; it is certainly a cheaper machine than the ordinary gin.

The Eagle manufactory of Bridgewater, exhibits a machine neatly executed, its mechanism skillfully wrought, and its plan well adapted to the performance of its duties.

Carver, Washburne & Company, of the same place, also exhibit a very good gin. E. Kellogg and Co., New Hartford, Ct., are the manufacturers and exhibitors of a cotton picker, the only one we have yet seen in the Fair; it is a very neat machine.

Next in the order of the manufacture is a slubbing and a roving frame, invented by Jno. Mason, of Rochdale, England, and exhibited by W. C. Hickok. They are in the English Department near the Machine Arcade. These machines do great credit to the designer and constructors. They are well and skillfully made, we have never seen better machinery anywhere; we believe it was a machine similar to one of these which gained a Council Medal at the World's Fair in 1851. For the information of such of our readers as may not understand these terms, we would state that the operations performed by them are the drawing out the rolls and slightly twisting them preparatory to their reception by the throstle frames or mules. This is all theEnglish cotton machinery in the Exhibition—we expected to see more of it. We must say that the English Department disappoints us. With the exception of these two frames for cotton spinning, the only machines exhibited are those from Whitworth's machine shop, in Manchester. This is the largest shop for making tools in the world, and its fame is not confined to old England. The tools which they exhibit are of excellent workmanship, and well designed for the purposes intended. We do not know why it is that the English Department is so poorly represented, there must be a reason for it; at present we do not feel pleased with the squalid looks of Uncle John's wooden walls as erected in the Crystal Palace.

ORNAMENTAL TABLES.

We intend hereafter to present our readers with illustrations of some of the various articles possessing most artistic merit.

Our engraving this week represents an ornamental table, exhibited by Morant & Boyd, of London. The top is of plate glass, painted in imitation of Florentine Mosaic, and the remainder is of brass: upon the pedestal stand three storks (the artist has represented but two, however,) and the column is entwined with flags. By the side of this stands another, representing three swans in a different attitude, and not far from these, John Fletcher, of Cork, exhibits a shamrock table, on the pedestal of which recline three figures, the one a warrior discharging his arrow, another a warrior pierced to the heart and fallen, and the third an aged minstrnl with his harp. The pillar is the natural limb of an oak tree, separating in three parts, and again uniting at the top. In the center is a symbolical figure of Erin. The whole is richly carved in thirteen different varieties of Irish woods. This table deserves particular notice; all the above are in the English Department.

J. C. Dodge, of Attleborough, Mass., shows a self-acting mule and throstle equally adapted for warp or woof; this machine has been favorably noticed by us in former volumes. Its manufacturers claim an increase of work amounting to fifty per cent. B. Brundred & Son, Paterson, N.J., exhibit an improved throstle which differs from others, in driving the spindles by friction instead of belts. The spindles are arranged upon a part of the periphery of a driving wheel upon which they rest, and by the friction of which, upon their lower ends, which are bevelled and covered with leather, they are propelled. An engraving of this throstle was published by us in No. 46, Vol. 7.

Next come the looms; of these there is quite a variety:—Benjamin & Reynolds, of Stockport, N. Y., are on hand with four beautiful looms from the Empire Works: these have several new features lately patented in England through our agency. It is a good invention, and we bespeak for it the attention of our transatlantic brethren, as we think it a little ahead of any thing to be found out of America.

Cotton looms for weaving checks are shown by Alfred Jenks & Son, of Bridesburg, Pa.; one of these has four shuttle drop boxes at one end of the lay, and an improved pattern wheel, which will run twelve hundred picks of any color, and can, if necessa ry, be extended to several thousand. This is a great improvement; they also claim a new arrangement of the shuttle boxes, by which they are neither liable to get bent nor to get out of line.—There is a beautiful loom from the Ames Manufacturing Co., Chicopee, Mass.: it is a check loom, and has a revolving shuttle-box: this loom embraces S. & J. Eccles' patent. It is a specimen of elegant workmanship.

There are two hand looms exhibited, in which all the motions for shedding the web and throwing the shuttle, are taken directly from the lathe. One of these has been illustrated in the 'Scientific American.' J. C. Garretson, of Salem, Iowa, is the patentee of this principle: it is certainly superior to any other hand loom that we have seen.

Related to the machines we have been describing is one for manufacturing the flexible tubes or cots used for covering the drawing rollers of cotton machinery. We have no hesitation in pronouncing this the greatest piece of mechanism which has yet met our eye in the Crystal Palace. Although the object of the machine is not of a kind tending to revolutionize manufactures, yet it is by no means contemptible, as those familiar with cotton machinery well know—over 25,000 of these cots are consumed daily in the State of Massachusetts alone. This machine is of close kin to Whittemore's card machine, and we doubt not that those interested will at once introduce it to use. Charles Collins, of Hartford, Conn., is the proprietor of the patent, and Newell Wyllys is the inventor: "Honor to whom honor is due," is our motto, and we shall set down the name of Wyllys among those of the ingenious mechanics who have not only honored themselves, but have placed our country in the proud position of the first in the world for ingenious and useful inventions. Every mechanic who visits the Palace must examine this; it stands near the power looms in the south part of the Machinery Arcade.

American Porcelain—The Sevres porcelain in the French Department is indeed beautiful—it surpasses any thing of the kind we have ever seen, but in a nook of the north-east corner of the American Department, in the gallery, there are a few specimens of porcelain, which possess an interest for us beyond all others in the Crystal Palace. The reason of this is, they are the only articles of porcelain which have been manufactured in our country. Although not numerous, comprising only a few articles of tea ware, door-plates, knobs, and decanters,—they do great credit to the manufactgrers, C. Cartlidge & Co., of Green Point, L. I. In design and decoration they exhibit taste and skill; in manufacture, they exhibit great experience, ingenuity, and knowledge of the art. In color and pattern they are not surpassed, and we are glad to know that the firm has been very successful, is in a prosperous condition, and employ more than a hundred operatives steadily. The manufacture of porcelain has been at various times attempted in our country, and the work of ornamenting imported foreign ware is performed in more than one place in New York; but the porcelain factory, at Green Point, is the only one in our country, where the complete manufacture of this beautiful ware is carried on. The materials for its manufacture are abundant in the United States, but it requires great experience and skill to conduct the manufacture through all its multiform operations. The reason of the failure of former attempts to establish this manufacture in our country was the want of the requisite qualifications; the reason of the success of this is, the possession of all those qualifications in the managers.—We hail the introduction of any new branch of useful manufacture into our country, and none more so than that of porcelain, requiring as it does so much scientific knowledge, ingenuity, and artistic skill. C. Cartledge's office is at 237 Broadway.

Statuary.—We intend hereafter to notice some of the most worthy productions among the statuary and paintings, until we shall have gone through the list.

As we have already remarked, the group of Powers is acknowledged by all—Europeans as well as Americans—to be the first in excellence. From this opinion we have not heard a dissenting voice. The perfect contour of Mother Eve, the classic beauty of the Fisher Boy, and the exquisite symmetry in form of the Greek Slave, surpassingly beautiful without being voluptuous, are perfections that set criticism at defiance.

Adam and Eve, after the Fall, is a cast by Prof. Jerichau, of Denmark: Eve is represented resting her elbow upon Adam, who stands in a thoughtful mood, his brow corrugated with anxious thought; the apple has just dropped from her hand, and the serpent is stealing from their presence. Very good, but much soiled.

Ganymede and the eagle is represented in two copies of the original of Thorwalsden, of Denmark. The marble in both is defective, but of the two, the one standing near the center of the Nave is best.

The Mendicant, by Strezza, of Rome, is excellent; the imploring expression of the upturned eyes, marble though they be, is beautifully delineated.

Lazzerini of Carrera is the artist and exhibitor of "Two Lovers going to the Well." Very good; their love seems mutual, but could not the artist sufficiently support a group of two statues without placing the stump of a tree, in a position where it could not add to the effect of the group?

"Hagar and Ishmael," by Caselli, of Florence, is a very good group. The anxiety of the mother and the exhausted condition of the child are faithfully portrayed. This is among the best of the Italian sculptures.

Paintings—No. 1 is a large-sized painting, by Van Pelt, of Holland, representing Martin Luther before the Diet of Worms. It is an elaborate piece, but although possessing some merit it has many faults. The features lack a characteristic expression. We do not believe Martin

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Luther looked at all as represented, the features are those of a Dutch boor, not of the leader of a great reform; nor are those of the grave individuals sitting in judgment upon him much better. The whole piece is at least sufficiently gloomy.

No. 6 is a magnificent Dusseldorf, by Hesenclever and Heppel, representing a deputation of workingmen before the City Council in the German Revolution of '48. We could not avoid contrasting this with No. 1: the noble bearing of the laborer in his homespun garments, the bloated self-sufficiency of the principal personage of the Council (the very personification of a fat Alderman); indeed, the characteristic expression of all the features, render this, in our judgment, by far the superior of the two *tableaux*.

No. 12 represents the Angel of Death bearing away a departing spirit: Horace Vernier, of Paris. Exceedingly beautiful; the angelic face, the golden hair, the beam of heavenly light personify the poet's brightest dreams, but amid all this loveliness, there is one fault, which we think detracts somewhat from the effect of the piece—we cannot admire the taste of the artist in bringing the wings of the dread Angel in a position where the *feathers* upon them are so plainly shown. His features are as they should be, shrouded in gloom, and the wings should have been in a similar situation.

No. 14 is one of the Dusseldorf school, and represents "The Old Mill," it is by Nocken. It has, for a small painting been considerably celebrated,—it is certainly fine.

No. 27 is a Night Watchman. by Hesenclever; graphic indeed, but where in the wide world did he find the original of that face—we have never seen its like.

No. 39 is the Good Samaritan, another Dusseldorf:—A fine piece, but where did the Samaritan get that glass bottle to contain his oil; if we remember rightly the bottles of those days were made of leather.

No. 47. A Mountain View in Norway. Another excellent Dusseldorf; though it has no remarkable excellences aside from the general effect, yet we observed no glaring faults.

TO CORRESPONDENTS.

D. A. M., of Pa.—The Convention at Washington would be a good place for you, if you can make an experiment; we will publish the results when all the information is obtained.

J. R. A., of N. Y.—Your plan for preventing the toe nails growing into the flesh at the sides, was one recommended to us some years ago, and we found it to be an effectual remedy. We are much obliged to you.

R. W., Jr., of N. Y.—You had better suspend the matter at present: it requires good management to make a patent successful.

M. W. S., of Mass.—The wedge brake is old and well known; the plan shown in your sketch is anticipated by B. Burling's invention, 1849; he never made application for a patent.

A. D., of Va.—We have never seen a device for breaking cars exactly like your, but it seems to be a crude affair—rather too complicated to answer a useful purpose. It has not much novelty.

D. F., of Me.—Webster's Dictionary contains all the terms used in mechanics. There is no special good work on this branch.

A. J. G., of Mass.—We should think your improvements in carriages to embrace novel features worthy of a patent. Send us a model.

E. W., of C. W.—The cost of an engraving will be $10.

I. W., of Wis.—Reid on Clocks and Watches, is the best work we know of in this branch; J. Blackie & Son, 117 Fulton st, sell it at about $5,50. Your list received. All right.

S. T. C., of Mo.—We cannot give you the price of an engine: write to Aaron Kilborn, of New Haven, Ct., who advertizes in our columns.

W. W., of Ohio—We presume you could procure space in the Palace by application to the proper superintendent.

W. H., of Geo.—The mortising machines are not sufficiently heavy for your purpose.

H. L. B. L., of Ohio—The Index of all patents granted in England from 1815 to 1845, was published in 1849 by Alex. Macintosh. We do not know that it is for sale in this country.

J. R., of Ill.—We cannot find that any patent has ever been granted to Mr. Malony; we therefore infer that he has no patent.

A. T. D., of Ind.—Berdan employs the same device as you describe for crushing or breaking the quartz previous to submitting to the process of pulverizing and amalgating.

J. S., of Geo.—As we understand your sketch, your saw is formed of two portions of a circular saw, made insections, but operating on the same principle. We believe would be difficult to obtain a patent, although it may operate well. Your spider, as combined with the saw, we believe is patentable. Your blocks have been sent by Harnden's Express.

D. H. W., of Mass.—Your plan of a rotary engine is one of the oldest ever offered: it has nothing to recomend it.

A. W. McL., of N. S.—It would save us much valuable time if you could furnish us with the name of the patentee. Under the designation given to the patent we cannot conveniently give the required information.

G. W. H., of N. Y.—A horse power is a power that will raise 33,000 lbs. one foot high in one minute. There is no difference in the water power if applied in the same way to the wheel.

S. F., of Me.—We do not see the least chance of obtaining a patent for your electro-magnet engine; it operates by electro magnets attracting armatures, and then breaking the circuit alternately, to give a reciprocating motion to a beam. This has been done long ago. Your sketch and description are very imperfect, but we believe we understand you fully: do not expend your money on the project.

A. K., of Grand Rapids.—There is no good portable gas apparatus for family use that we know of.

M. & T., of N. H.—We cannot tell when your case will be examined; the engravings can be published after the patent issues. The cost will not exceed $8. Patent Laws sent.

J. Z. A. W., of Phila.—There are some people who cannot be enlightened on any subject, and those who object to the depth of water increasing the pressure on the blade of your instrument, do not know what they are talking about. Even supposing the pressure to increase vertically with the depth, which it does; how can that effect its operation, when the pressure is equal on all sides? It cannot.

B. H. W., of Ill.—In shoe-blacking, instead of vitroll use vinegar: you will find it better for the leather. For tempering drills, the oil bath will not answer; we do not know of any superior plan to that of hard-heating—the old way.

C. K. W., of N. Y.—The points of copper lightning-rods can be plated with silver, but this is only to prevent their corroding; the silver is not so good a conductor as the copper. Do not be afraid of using the copper without being plated, only let the end in the ground terminate in a moist place about three feet under the surface.

W. E. G., of Phila.—The gum paste that you speak of is British gum. It will be cheaper for you to buy it. We had a letter from a correspondent last week about preserving gum arabic sweet; he perhaps mistook "diastaste," which comes from England, for dissolved gum arabic.

H. T. R., of N. H.—We have not the information you solicit about the number of spindles now running. $1 credited for six months subscription.

A. T., of Tenn.—We are not aware of any late work on street architecture. $8 received.

M. M. M., of Vt.—C. W. Copeland, engineer, of this city can furnish you wire cable.

Money received on account of Patent Office business for the week ending Saturday, Sept. 24:—

G. M. R., of N. Y., $20; G. R., Jr., of Pa., $30; C. F. P., of Conn., $25; T. & C., of ——, $35; W. G., Jr., of N. Y., $35; F. M., of Ill., $40; W. & T., of Del., $35; R. K., of Mass., $30; J. W. S., of Mich., $69; I. H., of N. J., $50; J. P., of N. Y., $30; D. & B., of N. Y., $225; F. & R., of Va. $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Sept. 24:—

W. C. W., of Mass.; I. M. H., of R. I.; E. M., of Pa.; G. C., of Me.; J. B., of Conn.

A Chapter of Suggestions, &c.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and these we are ENTIRELY out of—Nos. 2, 4, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 48, 49.

READY FOR DELIVERY—We have just received from the Binders 100 copies of Vol. 8, Scientific American, which will be sold to the first applicants at $2,75 per volume. We also have about 50 complete sets of Volume 8, in sheets, which will be sold at the subscription price—$2 per set. Those who apply first will stand the best chance to get their orders filled, for after the above number are sold no more can be obtained at any price.

TO CORRESPONDENTS.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication: anonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some invention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

BINDING.—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

FOREIGN SUBSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the present volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

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American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

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EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants.

EDITOR OF THE SCIENTIFIC AMERICAN—I observe in your paper of the 17th a statement that E. H. Ashcroft has sent you a circular, with engravings, which present a steam gauge, calling it Fontain Moro's patent, similar to my gauge, which was illustrated in No. 50, Vol. 8 Sci. Am. I wish to inform you that Fontain Moro, or E. H. Ashcroft never produced a gauge like mine, until Mr. Ashcroft obtained one of my gauges of the Boston and Worcester R. R., where I sold it. Mr. A. requested an engraver to copy from it almost precisely, but put upon the dial 'Fontain Moro,' instead of J. L. Eastman. That is where that circular came from, presenting a gage similar to mine. Will you please correct. My gauge, as arranged, is the original. JOSEPH L. EASTMAN,
1* East Boston, Mass.

UNITED STATES PATENT OFFICE,
Washington, Sept. 17, 1853.

ON THE PETITION of James Baldwin, of Nashua, New Hampshire, praying for the extension of a patent granted to him on the thirty-first of January, 1840, for an improvement in shuttles for weaving cloth, for seven years from the expiration of said patent, which takes place on the thirty-first day of January, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Monday, the 9th of January next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvania, Philadelphia, Pennsylvania: Evening Post, and Scientific American, New York; Boston Post, Boston, Massachusetts, and Patriot, Concord, New Hampshire, once a week for three successive weeks previous to the second Monday of January next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 3 3

NEW BRICK MACHINE.—Now in successful operation at Baltimore—it is so simple that any intelligent negro can learn to manage it in two or three days. You have merely to shovel clay into a box, and attach a horse to the sweep. The machine tempers the clay and moulds the brick in the most perfect manner, such as the most experienced hand can scarcely equal. When burned they are found to be stronger and more solid than those made in the usual way, because the clay is worked stiffer under the pressure of the screw than it is possible to mould it by hand. The clay is to be dug and left in soak all night. It then requires one man to shovel it in the box, a boy to put in the empty moulds, another to pass them to a barrow, a third to wheel them to the floor, a fourth to discharge them, a fifth as supernumerary, to wait on the rest—in all, one man, a horse, and five boys, make from eight to ten thousand bricks per day. The gold medal was awarded for it by the Maryland Institute in November, 1852. Price of the four mould machine, $250—of the five mould, $300, including patent for each machine. FRANCIS H. SMITH.
3 1* Baltimore, Md.

MATHEMATICAL OPTICAL INSTRUMENTS.—The subscriber begs leave to bring to the notice of the professional community, his new and extensive assortment of the above Instruments, which he partly imported direct from the most celebrated makers in Europe and partly had manufactured under his own personal supervision. The undersigned would particularly invite attention to his very large and complete assortment of the justly celebrated Swiss Mathematical Drawing Intsruments, for the sale of which in this country he has the sole Agency, and which he can furnish at from $5 to $200 per case. Orders from any part of the Union promptly executed, and price list sent if required.
3 6 C. T. AMSLER, 224 Chestnut st., Philadelphia.

VALUABLE WATER POWER FOR SALE—Situated in Stockport, Columbia Co., N. Y., 1 1-4 miles from a depot on the Hudson River Railroad, on a never-failing stream, now estimated to be of the capacity to run 600 power looms with all necessary machinery, and may be increased; dam built of stone, 19 feet fall. The improvements on one side consists in part of a build ing of stone and brick 118x47; over-shot wheel, nearly new, 14 feet diameter, 12 feet bucket; on the other, one of stone and wood 60x34, good over-shot wheel 14 feet diam. 7 feet bucket; with about 30 dwellings. Terms accommodating; title indisputable. Possession given immediately. For particulars inquire of R. B. MONELL, of Hudson, N. Y., or H. S. VAN DeCARR on the premises. 3 6*

DAGUERREOTYPE.—"American Hand Book of the Daguerreotype," is the title of a new work by S. D. Humphrey; it gives many new and valuable recipes; the methods of preparing chemicals used in the daguerreotype, art, also the most approved plan for producing portraits. It is purely apractical work, containing more really valuable information for the amateur or practical daguerreotypist than any volume ever before published. Single copies $2; sent by mail free of postage. Address. S. D. HUMPHREY, New York City; TRUBNER & CO., 12 Paternoster Row, London. 1*

MACHINERY.—S. C. HILLS, No. 12 Platt-st., N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills: Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's, and Law's Planing Machines; Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines; Belting; Machinery Oil, Beal's Patent Cob and Corn Mills; Burr Mill and Grindstones; Lead and Iron Pipe, &c. Letters, to be noticed, must be post-paid. 1tf eow

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months.. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
1 tf GEO. W. BEARDSLEE.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109, Pearl st., and 60 Beeaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinist's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also, a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. P. A. LEONARD.
1tf

LOGAN, VAIL & CO., No. 9 Gold st., New York.—Agency for Geo. Vail & Co., Speedwell Iron Works, Morristown, N. J., furnish and keep on hand Portable Steam Engines of various sizes, Saw and Grist Mill Irons, Hotchkiss's Water Wheels, Iron Water Wheels of any size, Portable Saw Mills, complete; Bogardus's celebrated Planetary Horse Powers; heaving forgings and castings for steamboats and rolling mills, Ratchet Drills of superior quality for machinists, Saw Gummers, Hand Drills, Tyre Benders, and shafting and machinery generally.
39 1y

CAUTION.—The public are hereby cautioned against purchasing or using Steam Gauges constructed on the principle of Fontain Moreau's Patent, or Bourdon's Patent, except that manufactured by the undersigned, who is owner of said patents for the United States. All infringements of said patents will be prosecuted according to law. E. H. ASHCROFT,
Manufacturer of Steam and Water Gauges,
1 4t* No. 4 Beverly street, Boston.

NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tongueing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass., N. G. NORCROSS.
40 20*

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
CHARLES W. COPELAND,
30 26* Consulting Engineer, 64 Broadway.

McCALLISTER & BROTHER.—Opticians and dealers in mathematical instruments, 48 Chesnut st., Philadelphia, Pa. Mathematical instruments separate and in cases, Protractors, Spacing Dividers, Drawing Pens, Ivory Scales, Tape Measures, Salometers, Spy Glasses, Microscopes, Hydrometers, &c., &c. An illustrated and priced catalogue will be sent by mail free of charge. 40 6m*

A GOOD CHANCE FOR MANUFACTURING.—A Water Privilege of ten feet fall, on a never-failing stream, with four acres of choice land, in the town of Cornwall, Orange Co., N. Y., 5 miles from the North River, and three miles from the railroad depot, and on the line of survey of the Albany and Hoboken RR. For particulars inquire of John J. Vanduzer, 184 Canal st., N. Y., or John Orr, on the premises. 41 13*

ATKINS' SELF-RAKING REAPER.—The unequalled success of this machine, both in grain and grass, and the information already received from agents, shows the demand another season will be more than I can supply. Every reaper heard from (about 30 in seven different States and Canada) gives good satisfaction with no drawbacks, though others to hear from may have given trouble. Arrangements must be made to supply the demand, and the inventor (Mr. Atkins) would like to realize something from the Patent at once, and part of the States may be offered for sale. If a satisfactory price cannot be got, then arrangements may possibly be made with manufacturers to build and pay a patent fee. A machine can be seen at the Crystal Palace, and others will be at some of the State and County Fairs this autumn. J. S. WRIGHT.
"Prairie Farmer" Warehouse, Chicago, Ill., August 6, 1853. 50 5*

PALMER'S PATENT LEG.—Manufactured by Palmer & Co., at No. 5 Burt's Block, Springfield, Mass., for New England and New York States, and 376 Chesnut street, Philadelphia; in every instance of competition in the Fairs of the various Institutes of this country, it has received the highest awards as "the best" in mechanism, usefulness, and economy. At the "World's Fair," London, 1851, in competition with thirty other varieties of artificial legs, (by the best artists in London and Paris,) it received the Prize Medal as the best. 48 10*

NORRIS WORKS, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping, and Portable Engines, and Mining Machinery of every description.
41 1y. THOMAS, CORSON & WEST.

PIG IRON—The subscriber has always on hand a stock of the best brands of American and Scotch Pig Iron, for sale at the lowest market price. G. O. ROBERTSON, 135 Water st, cor. Pine, N. Y. 1 8*

AARON KILBORN, No. 4, Howard street, New Haven, Ct., manufacturer of Steam Engines, Boilers, &c. Noiseless Fan Blower, a superior article, for smith's work, steam engines, brass and iron founders, and machinery in general. 51 10*

IRON FOUNDERS' MATERIALS. viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by
G. O. ROBERTSON,
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STEAM ENGINES AND PUMPS FOR SALE.—Two new high pressure Steam Engines, 16 inch bore of cylinder and 52 inch stroke of piston, 3 cylinder boilers to each engine 3 feet diameter and 40 feet long. Also two double acting Force Pumps, 10 inch bore and 4 feet stroke, fitted with gun metal valves, valve seats and packing. The above machinery is constructed of the best material and workmanship. Address
BIRKINBINE & TROTTER,
Engineers and Machinists, No. 16 Arch street,
1 4t* Philadelphia.

ALDEN'S PATENT FAN BLOWER—Gives a stronger blast, with less power than any other.
2 6* J. B. CHICHESTER, Agent, 585 Broadway, N. Y.

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines—The best in use, and applicable alike to thick and thin staves, for barrels, hogsheads, &c.; also his Head Cutting and Turning, and Stave Jointing and Crozing Machines. This machinery reduces the expense of manufacturing at least fifty per cent. For machines or territorial rights, apply to C. B. HUTCHINSON & CO., Syracuse, N. Y. 2tf

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Scientific Museum.

(For the Scientific American.)

Brick Burning.

I have just returned from a trip to Virginia to witness the successful operation of some of my new Brick Machines, and was astonished at the want of information which prevails away from the large cities, in regard to brick burning and the proper construction of kilns. The bricks are set with but little judgment, and burned with still less.

During the twelve years that I have been engaged in the business, always ready to profit by the experience of others, and avail myself of recent improvements, I have picked up a good deal of information, and this I propose to embody in a few plain, practical instructions, so that there shall be no mystery about the matter, and every farmer, if he pleases, may make his own bricks.

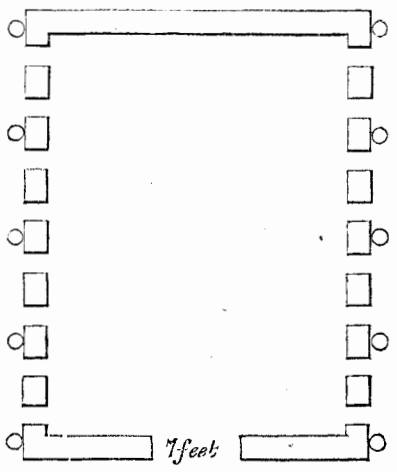
Much that follows will appear trite and common-place to an experienced hand, but I am addressing a country gentleman who wishes to burn a kiln for his own use, with the labor of his farm hands, and is supposed to be entirely ignorant of the business. Keeping this in view, I shall not omit those trivial points upon which success often mainly depends.

I need say nothing about the moulding of bricks. Let us suppose that your bricks are moulded, dried under cover, and ready for the kiln; the length, breadth, and heigth of which is governed by the size of the brick. Prepare a stick the length of two bricks, and another the length of three, and make a notch in the latter, dividing it equally; provide also, a strip of wood eight feet long and three inches wide as a straight edge.

Along what is to be the back of the wall, figure 1, stretch a line the length of thirty bricks, and at each extremity stretch a line at right angles with the first. This shows a parallelogram the width of the kiln. For the length apply the notch of the stick which measures a brick and a half for each corner; to this apply the other which represents the arch—then, the full length of the first stick, which now lays off a pillar, and so on alternately until you have marked off eight arches; the half of the long stick then completes forty bricks in length, each arch being five; at front, allow for a door seven feet wide. Do not regard a little extra trouble in building; it will repay you. With care, every brick that goes in except the binders will come out sound, not as I was told in Virginia, "they were glad if only a fourth was lost." The brick of the kiln may be turned to good account for "filling up" in frame buildings. The walls should be built according to rule; a mason may be employed to raise the corners and turn the arches; build with dried bricks laid in mud.—They should be two bricks thick from the foundation to one foot above the arches; the arch holes should be fourteen inches wide and sixteen high; when this is completed, prepare for the roof. Plant posts in the ground, one side hewn straight to go next the wall; place one at each corner, and three between them making five on a side. On these lay the roof, giving it a good pitch, and secure the boards to keep the rain out. Now run up the remainder of the walls a brick and a half for the next three feet, and one brick to the top; but against each post keep out a pier, as shown by the dotted lines, to bind it all the way up. Daub it then well, inside and out with clay and sand (two thirds sand) to prevent it splitting off as it dries. This kiln set thirty-six bricks high will contain 116,440; two such would do a good business for a small town.

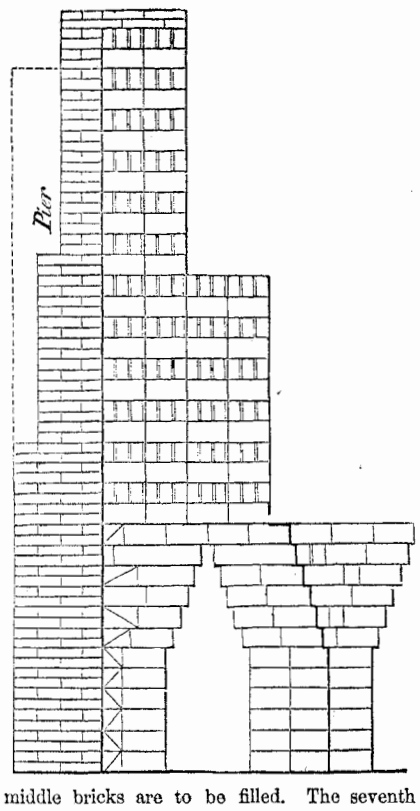
Setting.—First, see that the kiln is perfectly level; place the straight edge the width of a brick from the wall, and against it lay the first course half an inch apart; cover this with another, not breaking joints, then a tight course. Behind these lay three courses angularly, and crossing each other. Repeat all this. Place the straight edge the length of two bricks from those laid, and repeat the six courses, as in figure 2. Now commence the overhangers to form the arch, each course projecting about an inch. Lay them finger wide, and breaking the joints; the thirteenth course will bind all together. Now fill in behind, a whole brick when you can, and those angling behind them. Next comes the middle bricks; these have no tight course, but are finger wide apart, and breaking joints—these will be among the best bricks in the kiln. Having reached the top, there are four bricks in length from the back wall—this forms the "bench." Use now a board to stand upon and begin at the right-hand corner to raise the co-

Fig. 1.



lumns, three upon three, crossing all the way up, but be careful that they stand independent of each other; no overlapping, for if the kiln would settle irregularly, many would be broken off. Begin with four columns, and carry them up ten bricks higher; this forms a second bench to stand upon for topping out. Continue two of them thirteen courses high, which brings you to the top. Finish with the first course of platting laid flat, finger wide between the rows, but end to end running with the arch. The second course of plattings crosses these. The first course covers the kiln all over, but the second course is left off for a space three feet wide in the middle, and bricks are piled on the wall to be put on after the kiln is dried. By referring to figure 2, you will see how the spaces over the

Fig. 2.



middle bricks are to be filled. The seventh and tenth courses show the head of *one* crossing the other; the eighth and eleventh courses show *two*. These should all be placed an inch apart to let the flame circulate freely. Having rounded up the second arch the same as the first, mount the bench and carry up five courses, leaving the offset throughout to serve as a brace to keep the rest from falling. I forgot to observe that it might be well not to finish the wall until you have topped out the setting, so as to ascertain the exact height. The setting extends to two bricks higher than the wall, which is carried up with six courses, all headers—laid dry, which forms the casing. As the kiln shrinks in burning and settles off from the wall, this casing is driven up so as to keep all tight on top. The kiln being filled, close the *bestowing* opening, daub it well and throw earth along the bottom to exclude air. Put up a brick edgewise in the wall over the two, five, and seven arches, and ranging with them, three others along the middle of the kiln; make the three in range level with each other. By these you are to judge of the settling, and they form the only guide to know when the kiln is sufficiently burned. On each middle brick, place one on end, and as these disappear below the range of those on the wall, the degree of settling is ascertained. Sandy clay sinks less than that which is strong and tenacious; allow about seven inches for settling.

A brick shrinks in burning about as much as it does in drying—therefore if it lost in width one fourth of an inch, then thirty-six courses will settle nine inches.

Before fires are kindled the walls of the kiln must be made secure all round. Against the posts put up a shedding to protect the men from the weather; if this is well done it will operate as a good brace on those sides. Put up against each end walls three thick boards or slabs and brace them well with stout pieces let in the earth.

Burning.—Let the wood be dry. Begin with small dry sticks in all the mouths—it will burn slowly at first; the danger is in getting up a heat too fast. I have suffered the fires to go out the first and even the second nights, and always with decided benefit.

The water smoke must have time to escape slowly,—push in the burning brands and get a moderate fire through all the arches. Throughout the burning, keep it as equal as possible; never let one arch get ahead of another. As the water smoke disappears, fire up stronger, especially when the arches get red, and fire begins to be seen at the tops.

The water smoke will first disappear from the heads, over the mouths. Immediatety close the platting with a spade or hoe, moving two or three rows together until you have space to drop in a brick, and so follow up as the fire shows from above. As you approach the vacant space before mentioned, continue to close up until the whole is covered. This vacant space is of great importance, it serves as a flue to draw the fire to the middle, prevents cold spots, and renders the kiln more manageable.

The kiln being dry, and platting closed, fire away, all the mouths open; feed each alike as nearly as possible, be sure and keep the mouths full. Give the arches time to clea; that is, dor not fire upon a heavy bed of coals when the arches are very hot. Give the coals time to burn down a little, but never suffer a spot to get dark—keep the heat up to the end. Continue thus on both sides until the middle is started two inches, then prepare to close the windward side; have six choice sticks ready at each mouth, the bricks at hand, and a barrel of mud to close quickly. Push in the brands, lay in the bricks, daub over well, and throw earth against the bottom, and then fire from the other side. Provide the cliffs for each mouth (choice sticks to reach across), the same number for each, and lean them up that they may be drying and at hand. Proceed as before, using the same precautions against firing upon a heavy bed of coals, keeping the mouths always full, and continue until the opposite head has settled nearly enough; the remainder will be brought down when you turn for the other head.

The same course is now to be pursued on the other side, until the kiln is sufficiently settled. If you have been careful to distribute the wood equally throughout, the kiln should appear nearly as level when burned off as it was when set on fire.

Throughout the entire burning, whenever a crack appears shut it up. As the kiln settles and shrinks from the walls, drive up the casing, and as this breaks the daubing, daub it again. The air *must* be excluded.

The strong black line, fig. 2, shows the rounding up of the first arch.

If high winds prevail, boards must be nailed against the posts as high as three or four feet above the walls, and if that side be then open, the mouths must be protected also.

Francis H. Smith.

[Mr. Smith, as stated, is an experienced manufacturer of bricks, and a successful inventor of improved brick machines. His advertisement will be found on another page.

Celestial Phenomenon.

Meteors.—We have received a letter from David F. Pattee, of South Dedham, Mass., wherein he states that at about the same hour, on the same night, in the month of September, last year, when a bright meteor was seen in Texas, he saw it at North Enfield, N. H. It was as large in appearance as the full moon, and for a moment made night appear like day. It swept across the heavens from west to east with great velocity. In less than three seconds from the time it was first seen by him, it burst without the least noise into splendid streams of many colors, and disappeared. He has been often importuned to send us an account of this phenomenon, but has not done so until now. It is indeed a remarkable thing that he should see this meteor at the same time it was seen in Texas, as described in the Scientific American, page 18 last volume.

LITERARY NOTICES.

Book of the World—A family miscellany for instruction and amusement, edited by Dr. Gaspy. We have just received from the publishers, Messrs. Weik & Wieck, Philadelphia, the last number of the first volume, also No. 1 of volume 2. The work abounds in excellent reading upon all popular and instructive subjects, and is very finely embellished with plain and colored lithographs of animals, birds, insects, natural scenery, etc. It forms an elegant and useful volume, price each number 25 cts.

The City of Frankfort-on-the-Maine—Drawn and engraved by H. Worms, has been sent us by the abovefirm, it is a chaste and beautiful picture, worthy of preservation.

Lorenzo Benoni, or Passages in the Life of an Italian—One volume, 12 mo., price $1.—This is a work of transcendent interest, and deserves an extensive circulation. As a literary work it is of the highest order, and the facts "in the life of an Italian" will afford much instruction The work will unquestionably become widely circulated.

We have received from the publishers, Messrs. Stringer & Townsend, 222 Broadway, part 3rd, of the Practical Draughtsman's Book of Industrial Design. For sale by booksellers generally, at 37 1-2 cts per number.

The same enterprising publishers have just issued the History and Rudiments of Architecture, a volume of nearly 300 pages, embracing the Orders of Architecture, Architectural Styles of Various Countries, the nature and principles of ArchitecturalDesign, and a Glossary of Architectural Terms. Edited by John Bullock, Architect and C. E. A very good elementary work.

A very neat little work has been published by D. S. Humphrey, 546 Broadway, entitled the hand Book of the Daguerreotype. It contains not only the methods of operating with chemicals already prepared, but gives the modes of preparation. The method of silvering the plates is also described.

MECHANICS

Manufacturers and Inventors.

The present Volume of the SCIENTIFIC AMERICAN commences under the most gratifying assurances, and appearances indicate a very marked increase to the subscription list. This we regard as a flattering testimonial of the usefulness and popularity of the publication so generously supported. We are greatly indebted to our readers for much valuable matter, which has found a permanent record on its pages. The aid thus contributed has been most important to our success, and we are grateful for it.

From our foreign and home exchanges—from the workshops, fields, and laboratories of our own country, we have supplied a volume of more than four hundred pages of useful information, touching every branch of art, science, and invention, besides hundreds of engravings executed by artists exclusively in our employ.

The present Volume will be greatly improved in the style and quantity of the Engravings, and in the character of the matter, original and selected. Having every facility for obtaining information from all parts of Europe, we shall lay before our readers, in advance of our cotemporaries, a full account of the most prominent novelties brought forward.

The opening of the Crystal Palace in this city, forms an interesting subject for attraction. We shall study it faithfully for the benefit of our readers. and illustrate such inventions as may be deemed interesting and worthy.

The Scientific American is the Repertory of Patent Inventions: a volume, each complete in itself, forms an Encyclopedia of the useful and entertaining. The Patent Claims alone are worth ten times the subscription price to every inventor.

PRIZES!! PRIZES!!

The following Splendid Prizes will be given for the largest list of mail subscribers sent in by the first of January next:

$100 for the largest list.		$30 for the 7th largest list.	
$75 for the 2d largest list.		$25 for the 8th	ditto
$50 for the 3d	ditto	$20 for the 9th	ditto
$45 for the 4th	ditto	$15 for the 10th	ditto
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The cash will be paid to the order of the successfu competitors immediately after January 1st, 1854.

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

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